May 2005

Closing the Loop

Communicable Disease Bulletin for HSE Eastern Region

Contents Issue 5:

Welcome to the fifth Issue of Closing the Loop.

Our theme in this issue is infectious gastrointestinal illness. The Laboratory Topic provides key points when sending faecal samples to the laboratory. We also have an introductory section produced by the Regional Infection Control Advisory Committee. This deals with the topic of antibiotic use and antimicrobial resistance and with hand hygiene. It is hoped that this and future issues will keep you up to date with developments and issues on antimicrobial resistance in the Eastern Region.

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Foodborne illness peaks in summer

There are both "natural" and "people" causes to explain this fact. The "natural" causes refer to the fact that microorganisms, which are present throughout the environment in soil, air, water, and in the bodies of humans and animals multiply in the warm summer months and grow faster at room temperature.

The term "people" causes means the increase in outdoor activities; more outdoor cooking takes place without the safety controls, which a kitchen provides thermostat-controlled cooking, refrigeration and washing facilities, are usually not available.

Four steps to safer food in summertime

1. Wash hands and surfaces often
2. Separate raw and cooked foods
3. Cook food to proper temperatures
4. Refrigerate food promptly

Acute gastroenteritis is a common but frequently preventable illness. It is responsible for high levels of morbidity and mortality in the general population, but particularly for at-risk groups, such as infants and young children, the elderly and the immunocompromised. A recent study of acute gastroenteritis in Ireland, North and South, suggested that there were 3.2 million episodes of acute gastroenteritis each year or 8,800 new episodes each day on this island. Less than 30% sought medical care. The findings suggested that for every 100 persons in the community with acute gastroenteritis, 29 consult their GP and 2 stool samples are submitted for laboratory testing. These figures enforce the fact that the burden of gastrointestinal illness in Ireland is underestimated and is much higher than suggested by statutory notifications.

This report is available at **www.safefoodonline.com/reports_publications.asp**

The commonest clinical manifestations of many gastrointestinal infections are diarrhoea and vomiting.

Viral infections are the most common cause of illness, with *Norovirus* so-called winter vomiting bug and *Rotavirus* being the most common laboratory-confirmed viral agents. Bacterial gastroenteritis is usually caused by infection with *Campylobacter* or *Salmonella*.

In a small number of cases, *Escherichia coli O157* or other *E.coli*, can be the cause of bacterial gastroenteritis. The main protozoa that cause acute gastroenteritis are *Cryptosporidium* and *Giardia*.

Since January 2004 all individual cases of gastroenteritis have been notifiable to the Department of Public Health. Food and water-borne illnesses are now specified individually in the Infectious Diseases Legislation (e.g. campylobacteriosis, listeriosis and staphylococcal food poisoning).

Key Points

- All causes of gastroenteritis should be regarded as infectious unless good evidence suggests otherwise.
- A liquid stool is more likely than a formed stool to contaminate hands and the environment and is consequently at greater risk of spreading faecal pathogens.
- Vomit, like liquid stool, may be highly infectious.

In general the most important practical points in the management of gastroenteritis are:

- Adequate replacement of fluid losses by mouth or if necessary intravenously
- Hand washing is one of the most effective ways to prevent spread of illness
- In most cases antibiotics are not necessary and may be harmful
- Antimotility drugs are best avoided
- Send a faecal specimen to hospital microbiology laboratory.

Laboratory Topic

Key points to remember when sending faecal samples to laboratory

1. Transport ASAP or keep refrigerated
2. Several grams (few teaspoons) is required
3. Send 3 samples (best every other day if Ova / Parasites are suspected)

Clinical details	Laboratory investigations performed based on clinical details
Gastroenteritis	Salmonella / Shigella / *Campylobacter. E.coli 0157* on liquid and /or bloody faecal sample
Children <5yrs	As above and include E.coli 0157, Adenovirus, Rotavirus and *Cryptosporidium spp*
History of recent antibiotic therapy	*Clostridium difficile* toxin A /B detection
History Travel /Eosinophilia	Ova / Parasites
Cholera, seafood consumption/ Recent Travel (2-3 weeks) to known cholera endemic area	*Vibrio cholerae / V. parahaemolyticus*
Outbreak investigation	Norovirus (sent to NVRL)

Table 1 Laboratory investigations based on clinical details

Points to remember when submitting a sample:

- Patient's full name and address
- Patient's date of birth
- Travel history
- Indicate if part of an outbreak
- Food history
- History of recent antibiotic use

This information is required not only to ensure appropriate laboratory investigation but is also necessary for the purpose of statutory notification and that appropriate public health action may be taken.

Contributor: Dr Maureen Lynch, Consultant Microbiologist, Mater Hospital Dublin

Travellers' Diarrhoea

Travellers' diarrhoea is the most common illness affecting travellers. It is estimated that 20 to 50% of travellers from resource-rich to resource-poor countries are affected. The illness can occur at any time during the trip or even afterward. It is usually self-limiting and clears up after a few days. The risk of travellers' diarrhoea is higher where sanitation and hygiene standards are poor. It is more common in younger adults probably because they choose more adventurous destinations or styles of travel, like backpacking.

Micro-organisms which can cause travellers' diarrhoea include:

- Bacteria – *E.Coli*, primarily enterotoxigenic strains, *Campylobacter jejuni, Salmonella species and Shigella* species
- Parasites - *Giardia intestinalis, Entomoeba histolytica* and *Cryptosporidium parvum.*
- Viruses – Norovirus, Rotaviruses

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.*

The faecal/oral route through food and water spreads Hepatitis A, the commonest viral infection preventable through vaccination. Hepatitis A vaccine is very effective, initially giving one year's protection but if followed by a booster at six to 12 months, confers at least ten years and probably life-long immunity.

E.coli 0157

E.Coli is an organism commonly found in the intestinal tract of humans and animals, and most types do not cause human illness. One group however, Verocytotoxigenic *E.Coli* (VTEC), may cause serious illness or even death.

While the organism does not cause illness in animals, any meat, vegetables, milk or water that has been contaminated with animal faeces could contain this germ. Eating undercooked minced meat such as beef burgers may infect people and infection can be spread if personal hygiene or handwashing is inadequate.

E.Coli O157 causes a spectrum of illnesses, from mild non-bloody diarrhoea to haemorrhagic colitis. The illness is usually self-limiting and resolves within seven days. Haemolytic Uraemic Syndrome (HUS) complicates 2% to 7% of cases.

This is characterised by renal failure and anaemia caused by the breakdown of red blood cells occurring between two and 14 days after the onset of diarrhoea.

Treatment of uncomplicated E.Coli O157 is mainly supportive and includes the correction and maintenance of fluid and electrolyte balance and regular and careful monitoring for the development of HUS.

Antibiotics and anti-motility agents are not indicated.

***E.Coli O157* is a notifiable disease and should be notified without delay.**

Salmonellosis

Salmonellosis is a common cause of gastroenteritis. It is characterised by an acute enterocolitis, with sudden onset of abdominal pain, diarrhoea, nausea and sometimes vomiting. Fever is nearly always present. General supportive treatment is indicated. Antibiotics are not routinely indicated for treatment or to eliminate carriage.

Infection is acquired through the consumption of contaminated foods such as beef products, poultry, eggs and egg products. While it is mainly found in foods of animal origin all foods including vegetables may become contaminated.

In the kitchen *Salmonella* may be transferred from raw to cooked foods by hands, contact with kitchen surfaces and equipment.

At present there are over 2,500 known serotypes of Salmonella. In recent years, two serotypes, namely S. *enterica* serotype Enteritidis and S. *enterica* serotype Typhimurium have accounted for the majority of cases of human Salmonellosis.

Salmonella has a well-characterised seasonal distribution, being more common in warm weather.

Salmonellosis is a notifiable disease and should be notified without delay.

Campylobacter

Campylobacter is a relatively recently recognised human pathogen, which causes human intestinal illness in Ireland and in many countries with temperate climates. *Campylobacter spp* are widespread in the intestinal tract of warm-blooded animals used for food production and in domestic poultry. They may therefore readily contaminate raw meat, raw milk and raw milk products.

The organism is sensitive to freezing, heating, drying, acidic conditions, disinfection and irradiation; it survives poorly at room temperatures and in general survives better at cooling temperatures. It has been estimated that consumption of a small number of organism (500 or less) may be associated with illness.

Clinical disease varies from a mild self-limiting enterocolitis lasting 24 hours to severe illness lasting up to 10 days. Full recovery usually takes place without any specific treatment. Fluid replacement is of primary importance. Antimicrobial therapy may be necessary in the immunocompromised and those with more severe disease.

Campylobacteriosis has been statutorily notifiable since January 2004. Prior to this it was usually notified as "food poisoning (bacteria other than Salmonella)". In 2004 there were 588 notifications. In the first quarter in 2005 there have been 134 notifications.

Outbreaks of Infectious Intestinal Disease in the Eastern Region 2001-2003

Outbreak of infection or food-borne illness may be defined as two or more linked cases of the same illness or the situation where the observed number of cases exceeds the expected number, or a single case of disease caused by a significant pathogen (e.g. diphtheria or viral haemorrhagic fever). Outbreaks may be confined to some of the members of one family or may be more widespread and involve cases either locally, nationally or internationally.

Investigation of outbreaks of infectious diseases is one of the most important and challenging components of public health. Outbreaks of infectious intestinal disease (IID) include all outbreaks of gastroenteritis not just those related to transmission by food.

Outbreak investigations aim to identify the source of the outbreak, institute control measures and prevent additional cases. The information gathered on the epidemiology of outbreaks can be used to determine possible ways of preventing future outbreaks.

More specific objectives include estimating the burden of illness caused by outbreaks, identifying high-risk groups in the population and estimating the workload involved in the management of outbreaks. The information gathered can be used to inform public health professionals on the causes and factors contributing to outbreaks, to target prevention strategies and to monitor the effectiveness of prevention programmes.

Between 2001 and 2003, 128 IID outbreaks were reported excluding travel related types, resulting in 5,812 people becoming ill. Twenty-seven people were reported as having been hospitalised (0.46%), however this number does not include those who were already in hospital at the time that many outbreaks occurred.

Key findings

- Between 2001 and 2003, 128 IID outbreaks were reported.
- Viral causes were responsible for 5,584 cases of illness, representing 92% of those becoming ill.
- Norovirus was responsible for 69 of the 117 (59%) of the outbreaks.
- *E. Coli O157* accounted for four outbreaks.
- Most outbreaks were associated with person-to-person transmission or person-to-person transmission in conjunction with food-borne transmission.
- Nursing homes were the commonest location.
- Hospitals were where the largest number of people became ill.
- The largest number of outbreaks occurred in the early spring and early winter months of both 2002 and 2003

Antibiotic Use - Antimicrobial Resistance

Strategy for Antimicrobial Resistance in Ireland (SARI)

This is the first issue of what hopefully will be a regular supplement in "Closing the Loop" with which we hope to keep you up to date with developments and issues on antimicrobial resistance (AMR) in the Eastern Region.

In the News

The first cases of community-acquired methicillin-resistant *Staphylococcus aureus* (CA-MRSA) in Ireland were reported in the March 2005 issue of EPI-Insight published by the Health Protection Surveillance Centre. These cases did not have any of the risk factors for hospital acquired MRSA, i.e. no antimicrobial use within the last year and no close contact with a healthcare worker or relative who had recently been in hospital.
www.hpsc.ie/Publications/EPI-Insight/2005Issues/d1208.PDF

Documents & Guidelines

- Guidelines for Hand Hygiene in Irish Health Care Settings. Available on the HPSC website: **www.hpsc.ie/Publications/HandHygieneGuidelines/**
- A Strategy for the Control of Antimicrobial Resistance in Ireland available on the HPSC website: **www.hpsc.ie/Publications/Other/d150.PDF**

Background information on SARI

The National Strategy for the Control of Antimicrobial Resistance in Ireland (SARI) was launched in 2001 to combat the growing problem of antimicrobial resistance, which is recognised as a threat to public health with its increased morbidity, mortality, longer hospital stays and antibiotic costs.

A National Steering Committee, Regional SARI Committees and five national SARI Working Groups were established.

Much of the initial funding made available nationally to each region was used to employ some of the staff (infection control nurses, surveillance scientists etc.) required to address issues of antimicrobial resistance. Each region has convened a multi-disciplinary SARI committee.

In the Eastern region, the Regional SARI Committee, which is part of the Regional Infection Control Advisory Committee, advises on regional surveillance, antibiotic stewardship, and infection control initiatives as well as directing regional SARI funding.

At a national level the five SARI Working Groups address specific areas of SARI implementation:

1. Antimicrobial Resistance Surveillance (AMR)

The cornerstone of AMR surveillance in Ireland is the European Antimicrobial Resistance Surveillance System (EARSS). This is an international network of national surveillance systems, which aims to aggregate comparable and reliable antimicrobial resistance data for public health purposes involving 25 countries. Most of the acute hospitals in the Eastern Region via their laboratories contribute antibiotic resistance data on invasive isolates (blood only) of *Streptococcus pneumonia, Staphylococcus aureus, Escherichia coli* and *Enterococcus faecium* and *Enterococcus faecalis*. Such data provide valuable information on national and regional trends, sources of infection etc. Quarterly reports on national data are published by the Health Protection Surveillance Centre and may be seen on the HPSC website:
www.ndsc.ie/Publications/AntimicrobialResistance-EARSSReports/

Key points from the most recent national EARSS report (Quarter 4 2004) are:

- 39% of isolates of *Staphylococcus aureus* were resistant to methicillin/oxacillin
- 8.7% of isolates of *Streptococcus pneumonia* were resistant to penicillin and 13.7% were resistant to erythromycin
- 2.2% of isolates of *Escherichia coli* were resistant to third-generation cephalosporins (3GCs); 13.6% to ciprofloxacin and 6.8% to gentamicin;
- 1.4% of isolates of *Enterococcus faecalis* were resistant to vancomycin and 42.4% had high-level gentamicin resistance.
- 18.9% of isolates of *Enterococcus faecium* were resistant to vancomycin and 54.3% had high-level gentamicin resistance.

2. Antibiotic Consumption Stewardship

This Group is developing options for obtaining data on antibiotic prescribing and developing national surveillance systems for antibiotic consumption. We hope in future issue to provide feedback on prescribing practices in the region.

3. Community Antibiotic Stewardship

This Group is examining initiatives to develop a multidisciplinary stewardship model, which will include key groups such as GPs, Pharmacists, Public Health Nurses, patients, etc. This Group is also developing options for including such an educational model in undergraduate and postgraduate GP training.

4. Hospital Antibiotic Stewardship

This Group is developing a priority list of national hospital stewardship requirements and initiatives for the implementation of SARI. It has completed a survey of all acute hospitals in conjunction with the Infection Control Working Group below, which examined areas such

as staffing in infection control, pharmacy and occupational health as well as stewardship issues.

5. Infection Control

In addition details were obtained about current services and support structures available for infection control. Regional feedback will be provided to all acute hospitals. In the east, further analysis using a variety of hospital groupings is being done and results will be used to make recommendations in line with best practice.

This Group has also developed national guidelines on Hand Hygiene and are in the process of finalising guidelines for the prevention and control of MRSA.

Hand Hygiene

Hand hygiene or hand washing, is critical in the prevention of healthcare–associated infection by reducing the incidence of cross infection. Lack of appreciation of the benefits of hand hygiene, time restraints, staff shortages and the lack of wash hand basins, are just some of the excuses offered for infrequent hand washing by staff.

The development of Guidelines for Hand Hygiene in Irish Healthcare Settings was recommended in the Strategy for the Control of Antimicrobial Resistance in Ireland. **www.hpsc.ie/Publications/HandHygieneGuidelines/**

These guidelines need to be developed locally and must be a priority for everyone involved in patient care.

Key Points in guidelines

- Alcohol gels can be used routinely during the delivery of care, provided hands are not visibly soiled. They take 15 seconds to apply and dry. Individual pocket sized alcohol-based hand-rubs offer a practical solution to improve compliance.
- Healthcare facilities must provide adequate resources e.g. wash-hand basins, cleansing agents, disposable paper towels, etc.

Figure 1 Handwashing technique

- Management must address compliance issues and develop a culture where hand hygiene is valued.
- Liquid soap dispensers should be regularly cleaned and maintained
- Gloves should not be regarded as a substitute for hand-washing
- In an infectious disease outbreak situation, hand-washing and the use of gloves are important protective measures to prevent the transmission of infection to susceptible patients or staff providing the same glove is not worn from one patient to another patient, or between clean and dirty procedures on the same patient.
- Hands should always be washed after removing gloves and also before sterile gloves are worn.

There are three recommended levels of hand hygiene to ensure that the hand hygiene performed is suitable for the task being undertaken. These are:

- Social hand hygiene
- Antiseptic hand hygiene and
- Surgical hand hygiene

Social hand hygiene hygiene	Antiseptic hand hygiene	Surgical hand
Before handling food or feeding a patient	Before performing invasive procedures	Before all surgical procedures
After visiting the toilet	Before caring for susceptible patients (immuno-compromised)	
Before & after nursing the patient (e.g. bathing, bed-making)	Before & after touching wounds, urethral catheters etc	
Hand-washing is generally not needed following superficial contact with the patient	Before & after wearing gloves	

Table 2 Hand hygiene- when to perform each level?

The efficacy of hand hygiene will depend on application of an adequate volume of a suitable hand hygiene agent with good technique for the correct duration of time, and finally ensuring that hands are dried properly.

Methods

Social hand hygiene

The aim of social hand hygiene is to remove dirt and organic material, dead skin and most transient organisms. Hands should be washed for at least 15 seconds, with liquid soap and warm running water, and then dried with a disposable paper towel. Figure 1 shows the recommended technique.

Antiseptic hand hygiene

The aim of antiseptic hand hygiene is to remove all transient organisms and this achieves a higher level of cleanliness than during social hand hygiene. Aqueous antiseptic hand wash agents, such as chlorhexidine gluconate or povidone iodine, may be used (for a minimum of 15 seconds). Alternatively an alcohol based hand wash or gel may be used.

Surgical Hand-washing

Surgical hand hygiene should be performed prior to all surgical procedures, with the aim of removing all transient flora and substantially reducing resident flora. Agents are the same as for antiseptic hand hygiene and must provide broad-spectrum microbiocidal activity, act rapidly and persist on the skin over several hours and ideally also provide a cumulative effect after repeated use. The difference is in the time of scrub, which is increased to 2-3 minutes and should include wrists and forearms. If an alcoholic preparation is used, two applications of 5ml each, rubbed to dryness are suggested.

Contributors: Dr Máire O'Connor, Public Health Specialist, HSE Eastern Region and Dr Marie Therese Clancy, Consultant Microbiologist, Bon Secours Hospital.

Mumps

Mumps continues to occur in higher numbers than expected in the Eastern Region. Over the last 4 weeks over 45 cases were notified to the Department of Public Health, HSE, Eastern Region. It is occurring predominantly in exam classes in secondary schools. Our advice continues to be that young children should be fully immunised against MMR and that young adults who have been in contact with a case of mumps and who have not been fully immunised with 2 doses of MMR, or are unsure if they have been immunised, should attend their general practitioners for vaccination. The vaccination is free for children under the routine childhood immunisation programme and for young adults, aged 16-24 years of age who are contacts of mumps cases.

Vaccine News

Sanofi Pasteur MSD has announced the discontinuation of DT and Act-Hib from the end of March 2005. The 2002 Immunisation Guidelines for Ireland list the few genuine contraindications to the Pertussis vaccine: "encephalopathy developing within 7 days of previous dose of DTP/DtaP". If parents decide not to give Pertussis vaccine to their child, while stocks of DT and Hib are still available, give DT, IPV, Hib and Men C at 2, 4, and 6 months of age. When stocks of DT vaccine are no longer available Td vaccine can be used. **If Td is used as a primary vaccine, parents should be made aware that a sub-optimal dose of Diphtheria vaccine is being given and will not give the infant adequate protection against Diphtheria.** When stocks of Act-Hib run out there is another single Hib available, Hiberix from GSK, which can be ordered through Cahill May Roberts for those with genuine contraindications.

Computerised Child Health Information Systems

A new computerised Child Health Information System (CHIS), which includes birth, immunisation and child development modules, is currently being tested in the HSE Eastern Region.
It will go live shortly and will replace the existing Child Health IT System (RICHS).

We will keep you updated as testing progresses and your patience and support will be appreciated during the test period and during the transition to the new system.

Immunisation Update

The immunisation target in Ireland is for 95% of children to have completed the primary immunisation schedule by two years of age. If this is achieved and maintained it is possible to eradicate and control vaccine-preventable diseases and future outbreaks can be avoided.

The immunisation uptake rates for children born between 01/07/2003 and 30/09/2003 and who had received three doses of DTaP, IPV, Hib and MenC by the time they were 12 months old are presented below for each of the area health boards (Table 3). Rates for each quarter refer to the cohort of children born in the corresponding quarter the previous year. **The rates in the region are 3 to 4% below the national rates.**

The immunisation uptake rates for children born between 01/07/2002 and 30/09/2002 and who had received three doses of DTaP, IPV, Hib and MenC and one dose of MMR by the time they were 24 months old are presented below for each of the area health boards (Table 4). Rates for each quarter refer to the cohort of children born in the corresponding quarter two years previously. **Again the rates in the eastern region are 4 to 4 % below the national rates.**

% Uptake at 12 months
Cohort born 01/07/2003 – 31/12/2003

		%DT	%P	%Polio	%Hib	%Men C
NAHB	Q1-2004	77.8	77.6	77.6	77.7	77.0
	Q2-2004	75.5	75.3	75.5	75.5	74.5
	Q3-2004	77.4	77.2	77.2	77.4	76.4
	Q4-2004	78.7	78.7	78.6	78.5	77.9
SWAHB	Q1-2003	74.1	74.1	74.1	74.1	73.5
	Q2-2003	74.8	74.8	74.8	74.9	74.1
	Q3-2003	73.5	73.4	73.5	73.5	73.0
	Q4-2004	75.5	75.5	75.5	75.5	74.9
ECAHB	Q1-2004	79.3	78.2	79.1	79.2	78.4
	Q2-2004	80.0	79.9	80.0	80.0	79.3
	Q3-2004	78.9	78.9	78.9	78.9	78.6
	Q4-2004	82.9	82.9	82.9	83.0	82.7
HSE-ER	Q4-2004	80.8	80.7	80.8	80.8	80.4
Ireland *	Q4-2004	84.0	84.0	84.0	84.0	84.0

Table 3 % uptake at 12 months ** National rates courtesy of Health Protection Surveillance Centre*

% Uptake at 24 months
Cohort born 01/07/2002 – 31/12/2002

		%DT	%P	%Polio	%Hib	%Men C	%MMR
NAHB	Q1-2003	83.0	82.6	82.9	82.6	81.7	73.2
	Q2-2003	83.8	83.4	83.7	83.7	82.0	73.8
	Q3-2003	84.8	84.5	84.9	84.7	83.1	74.7
	Q4-2004	87.1	87.1	87.1	87.0	85.0	76.3
SWAHB	Q1-2003	84.8	84.5	84.3	84.4	83.3	74.2
	Q2-2003	86.6	86.4	86.4	86.3	85.2	75.7
	Q3-2003	86.2	86.1	86.2	86.2	84.5	74.9
	Q4-2004	87.8	87.6	87.7	87.5	85.9	77.4
ECAHB	Q1-2003	88.2	87.8	87.7	88.1	87.8	79.9
	Q2-2003	88.3	87.6	88.1	88.1	86.5	79.5
	Q3-2003	88.8	88.1	88.4	88.8	86.9	80.1
	Q4-2004	87.1	86.3	86.6	86.8	85.1	81.9
HSE-ER	Q4-2004	87.4	87.2	87.3	87.2	85.4	77.9
Ireland	Q4-2004	91.0	90.0	90.0	90.0	89.0	83.0

Table 4 % uptake rates at 24 months ** National rates courtesy of Health Protection Surveillance Centre*

Notifications quarter 1 2005

Data on notifications presented below show the various methods of notification used in the first quarter of 2005. (Clin = Clinical only; Lab = Laboratory only)
** These only reflect notifications received from laboratories by the end of March 2005.

Disease	Clin	Lab **	Clin & Lab **	Total Jan-Mar 2005	Total Notifications in 2004
Acute infectious gastroenteritis	48	105	166	319	610
Bacterial meningitis (not otherwise specified)	2	0	1	3	17
Campylobacter	17	80	37	134	588
Clostridium perfringens	0	0	0	0	2
Creutzfeldt Jakob disease sporadic	1	0	0	1	2
Cryptosporidiosis	0	1	0	1	23
Enterococcal bacteraemia	1	25	1	27	64
Enterohaemorrhagic E coli toxin producing	0	0	2	2	11
E coli infection (invasive)	0	59	5	64	159
Giardiasis	0	3	0	3	23
Haemophilus influenza disease (invasive)	0	2	4	6	16
Hepatitis A (acute)	1	1	3	5	31
Hepatitis B (acute & chronic)	20	97	18	135	513
Hepatitis C	41	235	12	288	974
Infectious parotitis (mumps)	26	11	5	42	96
Influenza	2	49	10	61	14
Legionellosis	0	0	0	0	2
Leptosporosis	0	0	0	0	6
Listeriosis	0	1	0	1	5
Malaria	1	1	1	3	12
Measles	16	1	0	17	222
Meningococcal disease	11	0	13	24	62
Noroviral infection (sporadic cases)	3	311	5	319	572
Paratyphoid	0	0	0	0	1
Pertussis	3	1	2	6	35
Q Fever	0	0	0	0	1
Rubella	2	0	0	2	24
Salmonellosis	2	11	10	23	160
Shigellosis	1	0	0	1	22
Staphylococcus aureus bacteraemia incl. MRSA	0	66	1	67	209
Staphylococcus aureus enterotoxigenic food poisoning	0	2	0	2	2
Streptococcus pneumonia invasive	3	26	5	34	71
Streptococcus pyogenes, group A infection (invasive)	1	2	0	3	25
Toxoplasmosis gondii	0	3	0	3	20
Tuberculosis	14	24	6	44	178
Typhoid (Salmonella typhi)	0	0	0	0	3
Viral encephalitis	0	0	0	0	2
Viral meningitis	2	0	0	2	9
Yersinosis	0	0	0	0	3
Total	**218**	**1117**	**307**	**1642**	**4789**

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