

7. Outbreaks

Summary

Number of outbreaks, 2008: 380
 Number of IID outbreaks: 281
 Number of non-IID outbreaks: 99

During 2008 there was a significant increase in outbreak activity throughout the country. Outbreaks of infectious disease are notifiable under the Infectious Diseases Regulations (amended 2003). These regulations define an outbreak 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. Outbreaks are classified as infectious intestinal disease (IID) or non-infectious intestinal disease (non-IID).

Table 1 summarises national outbreak data reported via CIDR for the year. A total of 380 outbreaks meeting the outbreak definition were notified in 2008. This represents a 47% increase on the number of outbreak notifications in 2007. These outbreaks were responsible for 4517 cases of illness, a 4% decrease on the previous year's rate of outbreak associated illness. General

outbreaks had 4282 associated cases of illness. Family outbreaks had 235 associated cases of illness.

Table 2 presents outbreaks by outbreak type and pathogen type. In 2008 there were 99 non-IID outbreaks reported, representing a three-fold increase in non-IID outbreak notifications since 2007 and accounting for the overall increase in outbreak notifications observed.

The increase in non-IID outbreaks is reflected in the national outbreak crude incidence rate (CIR) of 9.0/100,000 in 2008 (compared to a CIR of 6.1/100,000 in 2007). Seven of the eight health regions experienced a rise in CIR. The north-west region experienced not only the highest regional CIR rate for the year but also the largest increase in CIR from 9.3/100,000 in 2007 to 23.6/100,000 in 2008 (figure 1).

Norovirus and mumps were responsible for the two largest outbreaks where numbers ill exceeded 100 persons. In 2007 there were seven outbreaks that caused this level of infection, 86% of which were caused by norovirus. The largest mumps outbreak started in October 2008 in a university/college with 143 cases of mumps cases reported. The largest norovirus outbreak

Table 1: All outbreaks of Infectious Disease, number of IID and non-IID outbreaks, and total numbers ill in all outbreaks reported by health region (2008)

| HSE Region | No of Outbreaks | Outbreak Rate | Total number ill | No of IID Outbreaks | Total number ill IID Outbreak | No of non-IID outbreaks | Total number ill non-IID Outbreak |
|--------------|-----------------|---------------|------------------|---------------------|-------------------------------|-------------------------|-----------------------------------|
| East | 107 | 7.2 | 1384 | 66 | 1044 | 41 | 340 |
| Midland | 20 | 7.9 | 144 | 18 | 125 | 2 | 19 |
| Midwest | 20 | 5.5 | 153 | 18 | 102 | 2 | 51 |
| HPSC | 6 | ~ | 55 | 6 | 55 | 0 | 0 |
| Northeast | 32 | 8.1 | 516 | 27 | 417 | 5 | 99 |
| NWHB | 56 | 23.6 | 865 | 41 | 672 | 15 | 193 |
| SEHB | 38 | 8.2 | 393 | 32 | 370 | 6 | 23 |
| SHB | 57 | 9.2 | 765 | 53 | 721 | 4 | 44 |
| WHB | 44 | 10.6 | 242 | 20 | 163 | 24 | 79 |
| Total | 380 | 9.0 | 4517 | 281 | 3669 | 99 | 848 |

occurred in May in a factory location. There were 291 cases of illness in this outbreak.

Private homes, hospitals and community hospitals/ long stay units were locations where most outbreaks occurred in 2008 (Table 3). While private homes experienced the greatest number of outbreaks, they only account for 5% of outbreak cases. Healthcare facilities such as hospitals, long-stay units/community hospitals and residential institutions all had high numbers of outbreaks and high levels of illness associated.

During 2008 universities/colleges experienced a significant upsurge in outbreaks mainly due to mumps. There were 19 outbreaks nationally of mumps in these institutions (including one university/community outbreak) with 429 reported cases. There was one reported outbreak of norovirus in a university/college with 43 cases.

Significantly the number of outbreaks occurring within

crèches (n=28) doubled compared to 2007. When examined by causative pathogen the largest outbreaks were caused by acute infectious gastroenteritis (AIG) (n=7 and 107 cases of illness), norovirus (n=3 and 47 cases of illness) and EHEC (n=5 and 22 cases of illness). Shigellosis, cryptosporidiosis, mumps individually caused one outbreak each. Varicella/ chickenpox (confirmed and suspected), hand foot and mouth (confirmed and suspected) and tinea/ringworm, cumulatively caused ten outbreaks and 86 cases of illness in crèches. Varicella (n=5) was the most common cause of these ten outbreaks, accounted for 71% of cases.

IID-Outbreaks

There were 281 IID outbreaks (table 4). Norovirus (including suspected Norovirus and mixed outbreaks with Norovirus listed as an agent) remained the largest cause of IID outbreaks in Ireland. In 2008 164 of these outbreaks caused 2873 cases of illness (compared to 1644 cases of illness associated with all other outbreaks during the year).

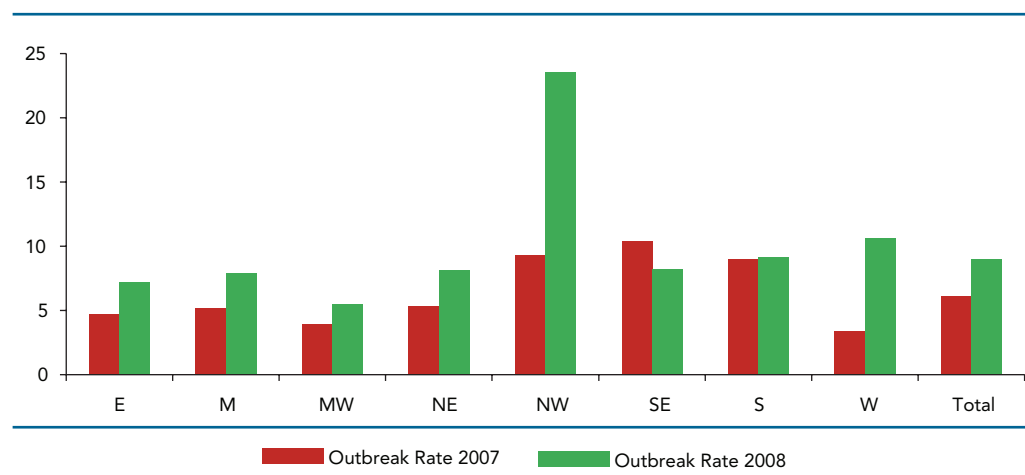


Figure 1: Outbreak CIR by region, 2007 and 2008.

Table 2: Number of outbreaks and persons ill by pathogen type and outbreak type, 2008.

| Outbreak Pathogen Type | General | | Family | | Total ill |
|------------------------|------------------|-------------|------------------|------------|-------------|
| | No. of Outbreaks | Number ill | No. of Outbreaks | Number ill | |
| IID | 215 | 3502 | 66 | 167 | 3669 |
| Non IID | 74 | 780 | 25 | 68 | 848 |
| Total | 289 | 4282 | 91 | 235 | 4517 |

After norovirus (n=164), the next most commonly reported IID outbreak pathogens were EHEC (n=42), salmonellosis (n=22), AIG (n=14), rotavirus (n=8), cryptosporidiosis (n=8) and campylobacter (n=7) (table 5). The number of outbreaks due to EHEC reported in 2008 (n=42) was double the number reported in 2007 (n=21) and resulted in a 14% increase in numbers ill.

Person to person contact was reported as the most frequent mode of transmission for IID outbreaks, foodborne was the second most common. Mixed person to person and waterborne mode of transmission (which was not documented in 2007) was specified in six outbreaks (EHEC n=5, cryptosporidiosis n=1). All six outbreaks were family outbreaks in private homes. In four of the five EHEC outbreaks, the households' private wells tested positive for EHEC. In the fifth case, a private well was the suspected source. No further information was available on the cryptosporidium outbreak.

There was a 73% increase on the number of outbreaks where the mode of transmission was listed as mixed person to person and airborne. These were caused primarily by norovirus (92%, including one mixed norovirus and *C. difficile* outbreak). All but three of these outbreaks were general outbreaks and occurred mainly in the healthcare facilities.

Hospitals (n=70), private homes (n=62), community hospitals/long stay units (n=48) and residential institutions (n=42) were the commonest place of occurrence of IID outbreaks. In hospitals 86% of outbreaks were attributable to norovirus, 6% to *C. difficile* and 3% due to salmonellosis.

There were 22 outbreaks of *Salmonella* during the year (four travel related) resulting in 79 persons ill (hospitalisation rate of 25%). This is an increase of 120% on the number of salmonellosis outbreaks reported in

the previous year. Ten outbreaks were family outbreaks in private houses. In eight of the 12 general outbreaks the suspected mode of transmission was foodborne (three being related travel related).

Eight outbreaks of cryptosporidiosis were reported in 2008: four general outbreaks and four family outbreaks. All were small outbreaks, and between them accounted for 29 cases. Two small outbreaks occurred in crèches and were believed to be due to person-to-person spread, as was one of the family outbreaks.

Forty-two VTEC outbreaks were reported in 2008. Nine outbreaks were described as general outbreaks and 33 as family outbreaks. Twenty-nine outbreaks were due to VTEC O157, seven due to VTEC O26, and six were caused by a mixture of VTEC strains. Person-to-person spread was suspected to have played a role in 21 VTEC outbreaks. The second most common transmission route reported for EHEC outbreaks in 2008 was waterborne (n=8).

In July 2008 the National Surveillance Reference Laboratory (NSRL) alerted colleagues in the HPSC of a cluster of five *S. Agona* cases. Following contact with UK colleagues, a much larger cluster involving the UK was identified. A joint outbreak investigation involving HPSC, NSRL, the HSE, the Food Safety of Authority of Ireland, the Department of Agriculture and Food and sister agencies in the UK was conducted. Alerts were sent using the Food and Waterborne Diseases (FWD) network, the European Union's Early Warning and Response System (EWRS) and the European Unions' Rapid Alert System for Food and Feed (RASFF). These ultimately resulted in the identification of 11 Irish cases and 152 cases throughout England, Scotland, Wales and five other European countries. The outbreak strain was associated with two deaths. Epidemiological investigations, supported by microbiological evidence, identified meat product produced at an Irish food plant

Table 3: Location of All Outbreaks, 2008

| Outbreak Location | % of Outbreaks | % ill |
|---------------------------|----------------|----------------|
| Private house | 23.2% (n=88) | 5% (n=227) |
| Hospital | 19.5% (n=74) | 25.9% (n=1168) |
| Comm. Hosp/Long-stay unit | 13.4% (n=51) | 17.2% (n=775) |
| Residential institution | 12.1% (n=46) | 15.1% (n=681) |
| Other | 8.7% (n=33) | 14.6% (n=658) |
| Creche | 7.4% (n=28) | 6.5% (n=294) |
| University/College | 5% (n=19) | 9.6% (n=431) |
| Community outbreak | 3.7% (n=14) | 1.8% (n=79) |
| School | 2.9% (n=11) | 1.5% (n=68) |
| Hotel | 1.6% (n=6) | 2.1% (n=96) |
| Travel related | 1.6% (n=5) | 0.4% (n=20) |
| Unknown | 1% (n=3) | 0.1% (n=6) |
| Not Specified | 0% (n=1) | 0.0% (n=2) |
| Restaurant / Cafe | 0% (n=1) | 0.0% (n=2) |

as the source of the outbreak. The company voluntarily closed the implicated section of the plant temporarily and recalled affected product.

During 2008 there were seven family outbreaks of *Campylobacter* notified on CIDR with 14 associated cases of illness. These were all small clusters of illness with no more than two people ill in any outbreak.

There were eight outbreaks of rotavirus notified in 2008 accounting for 97 cases of illness. Four of the seven outbreaks occurred in crèches, two were private family outbreaks, an outbreak occurred in a long stay community hospital with 45 cases of illness. The location of the final outbreak is unknown.

Non-IID Outbreaks

Non-IID outbreaks occurred mostly in educational and childcare settings (n=40), and, private houses (n=26). Table 5 presents all outbreaks occurring during 2008 due to non-IID agents.

In 2008, there were five outbreaks of hand, foot and mouth disease notified, only one of which was laboratory confirmed. Four occurred in crèches and one within a school. In total there were 24 ill. These are the first outbreaks of (suspected) hand, foot and mouth disease outbreaks notified since 2006.

In 2008, mumps emerged as the leading cause of non-IID outbreaks (table 5). As mentioned previously the number of reported non-IID outbreaks in Ireland increased three fold during 2008. The number of mumps outbreaks increased from only three in 2007

(with ten cases of illness) to a total of 57 in 2008 causing 580 cases of illness. Of the mumps outbreaks, 49% (n=28) occurred in educational institutions (including schools, summer schools and university/colleges), 30% (n=17) in private houses and 11% (n=6) in the community. Of the 580 cases of illness due to mumps, 480 were linked to educational settings. The second largest reported outbreak in 2008 was due to mumps in a university/college with 143 cases of mumps illness. One mumps outbreak involved a mixed location, occurring within a university and a community, causing 41 cases of illness. As some of the mumps outbreaks continued into 2009 the final number of cases associated with these outbreaks may change.

In 2008 an outbreak of wound botulism due *Clostridium botulinum* type b occurred in intravenous drug users in the Dublin area. There were six cases of illness, five of which were hospitalised and one patient died. Three cases were laboratory confirmed. Patients were aged between 23-42 years of age and presented to four different hospitals across the city. A contaminated batch of heroin was thought to be the most likely source of the outbreak but this was not confirmed. Botulism in Ireland (both foodborne and wound) is extremely rare in Ireland and had not been seen in injecting drug users since 2002.

Table 4: Pathogens associated with IID outbreaks notified on CIDR in 2008

| Disease | No. Family Outbreaks | No. General Outbreaks | Total No. Outbreaks 2008 | No ill 2008 |
|--|----------------------|-----------------------|--------------------------|-------------|
| AIG-Unknown | 0 | 14 | 14 | 297 |
| Adenovirus | 2 | 0 | 2 | 5 |
| Campylobacter | 7 | 0 | 7 | 14 |
| <i>Clostridium difficile</i> | 0 | 5 | 5 | 84 |
| <i>Clostridium difficile</i> and Norovirus | 0 | 1 | 1 | 12 |
| Cryptosporidiosis | 4 | 4 | 8 | 29 |
| EHEC | 33 | 9 | 42 | 119 |
| Giardiasis | 3 | 0 | 3 | 6 |
| Norovirus/Suspected Norovirus infection | 2 | 161 | 163 | 2861 |
| Rotavirus | 3 | 5 | 8 | 97 |
| Salmonellosis | 10 | 12 | 22 | 79 |
| Shigellosis | 2 | 2 | 4 | 36 |
| Suspected Rotavirus | 0 | 2 | 2 | 30 |
| Total | 66 | 215 | 281 | 3669 |

Table 5: Non-IID outbreaks notified on CIDR in 2008

| Disease | Total No Outbreaks | No ill |
|---|--------------------|------------|
| Botulism | 1 | 5 |
| ESBL <i>E. coli</i> | 2 | 6 |
| Group A strep | 1 | 10 |
| Hand Foot & Mouth Disease (including suspected) | 5 | 24 |
| Hepatitis A (acute) | 4 | 9 |
| Hepatitis B (acute and chronic) | 1 | 2 |
| Influenza | 4 | 62 |
| Legionellosis | 1 | 3 |
| Measles | 2 | 6 |
| Meningococcal disease | 1 | 2 |
| MRSA | 1 | 5 |
| Mumps | 57 | 580 |
| Mycobacterium tuberculosis | 1 | 1 |
| Pertussis | 2 | 6 |
| Scabies | 1 | 7 |
| Tinea/Ringworm | 2 | 17 |
| Tuberculosis | 1 | 6 |
| Unknown | 2 | 12 |
| Varicella (including suspected) | 9 | 83 |
| Viral meningitis | 1 | 2 |
| Total | 99 | 848 |