

# Rotavirus in Ireland, 2005

## Key Points

- Rotavirus remains one of the most common causes of acute infectious gastroenteritis in Ireland
- In 2005, there were 2251 cases of rotavirus notified (CIR 57.5/10<sup>5</sup>)
- The highest burden of illness was in children under 2 years of age
- In 2005, the highest incidence rate was reported from the Western health board region (99.4/ 10<sup>5</sup>)

## Background

Rotavirus is the most common cause of acute gastroenteritis in children worldwide and a frequent cause of diarrhoea associated deaths in developing countries. In developed countries, mortality due to rotavirus is low, however the morbidity and economic costs associated with infection are significant.<sup>1</sup>

Illness is characterised by sudden onset diarrhoea and vomiting, often with mild fever. Occasionally there is blood in stools. Symptoms usually last for only a few days but in severe cases hospitalisation may be required due to dehydration. Transmission is usually person-to-person, mainly via the faecal-oral route. Children less than two years of age are most susceptible to infection, although cases are often seen in elderly and immunocompromised adults - particularly in institutional settings. Transmission can be rapid, through person-to-person contact, airborne droplets, or contact with contaminated objects such as toys.

## Methods

Acute infectious gastroenteritis became a statutorily notifiable disease for the first time in January 2004 under the Amendment to the Infectious Diseases Regulations.<sup>1</sup> Only cases of rotavirus and gastroenteritis unspecified are notifiable under this disease category. Prior to 2004 gastroenteritis was only notifiable when contracted by children less than two years of age. Data for this report were extracted and analysed from the CIDR system.

Table 1: Number of cases and CIR per 100,000 population of rotavirus in Ireland by health board, 2005.

Health Board	No. of cases	CIR
HSE-E	658	47.0
HSE-M	176	78.1
HSE-MW	92	27.1
HSE-NE	162	47.0
HSE-NW	167	75.4
HSE-SE	283	66.8
HSE-S	335	57.7
HSE-W	378	99.4
<b>Total</b>	<b>2251</b>	<b>57.5</b>

Table 2: Age specific incidence rates for rotavirus in Ireland, 2005.

Age Group (Years)	Number of cases	ASIR
0-4	2172	782.3
5-9	25	9.5
10-14	5	1.8
15-19	2	0.6
20-24	1	0.3
25-34	2	0.3
35-44	0	0.0
45-54	1	0.2
55-64	2	0.6
65+	22	5.0
Unknown	19	-
<b>Total</b>	<b>2251</b>	<b>57.5</b>

## Results

### Incidence

There were 2404 notifications of Acute Infectious Gastroenteritis (AIG) in 2005. Rotavirus was the causative organism identified in 2251 (93%) of these giving a crude incidence rate (CIR) of 57.5 cases per 100,000 population (table 1). This represents an increase compared to 2004, when 1600 cases of rotavirus were notified (CIR 40.8 cases per 100,000). The incidence rates increased across all health boards relative to 2004 values, except in the Southern Region where a decrease was observed (Figure 1). The highest incidence rate was in the Western Region with a CIR of 99.4 per 100,000 population.

### Seasonal distribution

Analysis of the data by week of notification is shown in Figure 2. Most cases were notified in the first half of the year with a peak incidence during week 17. A later peak was also observed during week 33, however this was attributable to the bulk uploading of notifications for April, May, June and August for the WHB region.

### Age

When the distribution of cases for each age group is examined, it is evident that the highest burden of illness is seen in children less than five years (table 2). A further

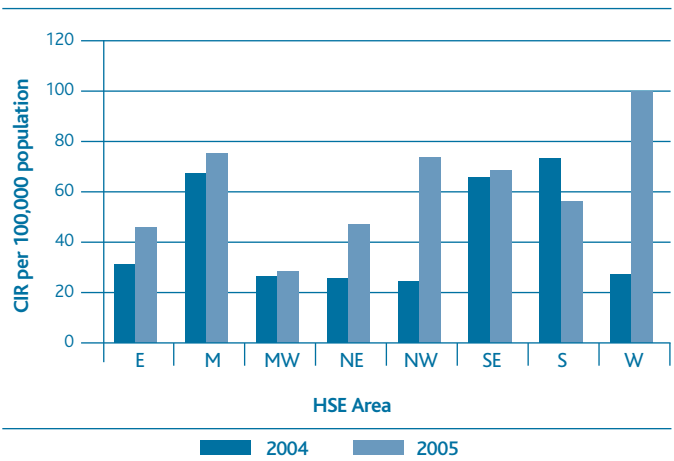


Figure 1: Crude incidence rate per 100,000 population for rotavirus by health board in Ireland, 2004 to 2005.

breakdown of these figures revealed that the majority (n = 2026) of infections occurred in children less than two years of age. There has been a continuous increase in the number of cases affecting this age group over recent years (Figure 3). As rotavirus became notifiable in 2004 it is possible that figures for previous years underestimate the true burden of infection and this should be borne in mind when analyzing these data.

### Gender distribution

No significant gender bias was noted in 2005 with a male:female ratio of 1.11: 1. This is similar to the ratio observed in 2004 (1.18: 1).

### Outbreak data

There was only one outbreak of rotavirus notified in 2005. This general outbreak occurred in the Eastern region in a residential institution. A total of 14 people became ill and the suspected mode of transmission was person-to-person spread.

### Discussion

In 2004, rotavirus infections became statutorily notifiable for the first time under the disease category Acute Infectious Gastroenteritis (Amendment to the Infectious Diseases Regulations).<sup>1</sup> Prior to 2004 only gastroenteritis cases in children under two years of age were notifiable.

The crude incidence rate (CIR) of rotavirus increased in Ireland

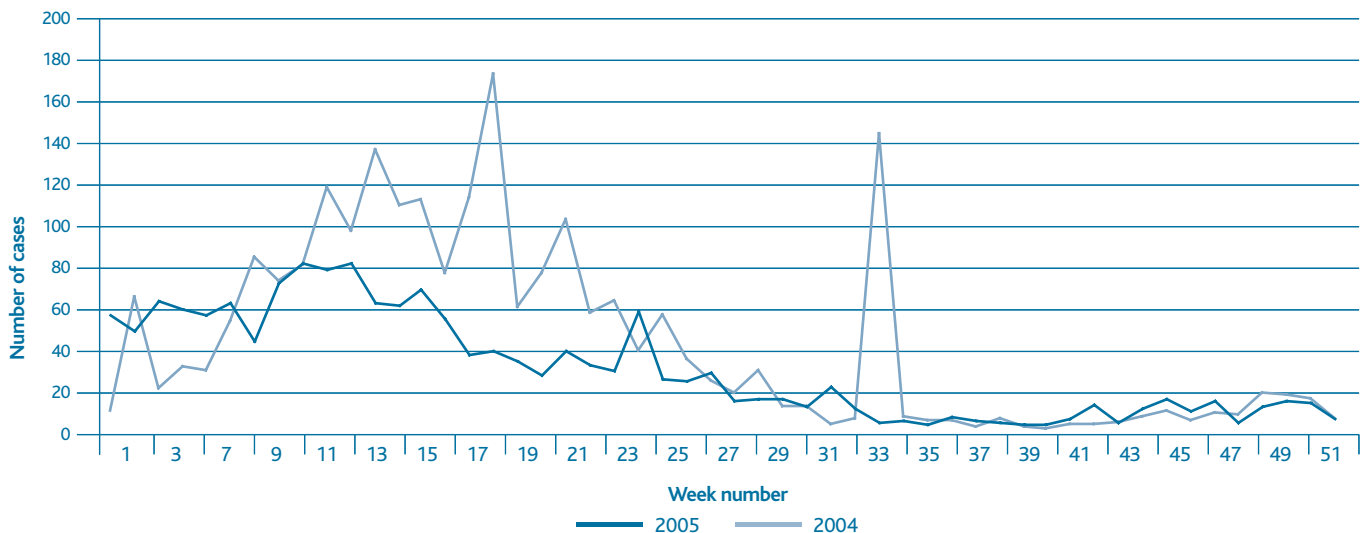


Figure 2: Total number of rotavirus events by week, 2005 (data from CIDR)

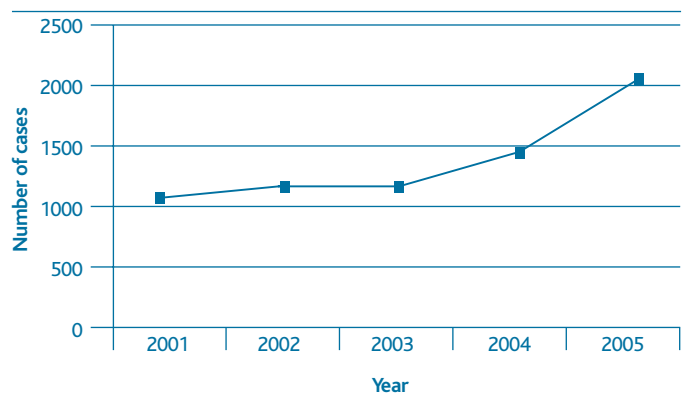


Figure 3: Number of cases of rotavirus in children less than two by year, 2001 to 2005

in 2005 (57.5 cases/100,000 persons) compared to 2004 (40.8/100,000). In most regions, an increase was seen in 2005, especially in the WHB region. For the same period, lower rates were noted for England and Wales<sup>2,3</sup> (26.8/100,000) [calculated from provisional data 28/09/06] and Scotland<sup>4</sup> (31.5/100,000). However rotavirus is not statutorily notifiable in the UK and so meaningful comparisons cannot be made.

Analysis of the data presented here shows that children less than two years of age are most at risk. This was also noted in 2004 and is a well-reported feature of the illness worldwide. Seasonal peaks in winter/spring, as observed here, are also a common feature of rotavirus infections in temperate climates.

The morbidity and associated medical costs associated with rotavirus infections is considerable, the extent of which was highlighted in an Irish study published in 2003.<sup>5</sup> The study monitored hospital admissions, treatments and costs of rotavirus infections in two paediatric hospitals, over a 2-year period. Results revealed that one percent of all hospital admissions were for community-acquired rotavirus. Of these cases, 87% required intravenous rehydration and 13% were rehydrated orally. The minimum cost per case was 728.40. This represents a significant burden on healthcare resources in Ireland.

It is a widely accepted theory that every child will have a rotavirus infection within the first five years of life.<sup>2</sup> These

early rotavirus infections induce long-lasting immunity and are the reason infections are uncommon in adulthood. This acquired immunity has prompted much research into the development of an effective vaccine in recent decades and is a high priority for international agencies such as WHO and the Global Alliance for Vaccine and Immunisations.

#### Acknowledgements

We wish to thank all who have provided data for this report, including specialists in public health medicine, senior/area medical officers, surveillance scientists, clinical microbiologists, medical scientists, infection control nurses, principal/environmental health officers.

#### References

1. Health Protection Surveillance Centre  
<http://www.ndsc.ie/NotifiableDiseases/NotificationLegislationandProcess/Title,1252,en.html>
2. Health Protection Agency – Centre for Infections.  
[http://www.hpa.org.uk/infections/topics\\_az/salmonella/data\\_human.htm](http://www.hpa.org.uk/infections/topics_az/salmonella/data_human.htm)
3. National Statistics. Population Estimates  
<http://www.statistics.gov.uk/statbase/explorer.asp?CTG=3&SL=&E=4819-4819>
4. SCIEH. Gastro-intestinal and foodborne infections: Incidence of viral and protozoal infections reported to HPS in 2005 (Norovirus, Rotavirus, Adenovirus, Astrovirus, Calicivirus, Hepatitis A, Cryptosporidium, Giardia).  
<http://www.hps.scot.nhs.uk/Search/detail.aspx?id=5868006>
5. Harrington, M., Butler, K., Cafferkey, M. Rotavirus infection in hospitalised children: incidence and impact on healthcare resources. *IJMS*, 172:1