

3.6 Salmonella

Summary

Number of confirmed cases: 260

Crude incidence rate: 5.7/100,000

Salmonellosis typically presents clinically as an acute enterocolitis, with sudden onset of abdominal pain, diarrhoea, nausea, headache and occasionally vomiting. Fever is almost always present. Dehydration, especially amongst vulnerable populations such as infants, the immunocompromised and the elderly, may be severe. Invasive infection occurs in a proportion of cases. *S. Typhi* and *S. Paratyphi* can cause enteric fever, a severe systemic life threatening condition, but these are not common in Ireland and are almost invariably travel-associated.

The common reservoirs for non-typhoidal *Salmonella* are the intestinal tract of domestic and wild animals (including birds), which may result in a variety of foodstuffs, of both animal and plant origin, becoming contaminated with faecal organisms either directly or indirectly. The organism may also be transmitted through direct contact with infected animals or humans

or faecally contaminated environments. Infected food handlers may also act as a source of contamination for foodstuffs. Of particular concern is the number of cases of infection associated with direct contact with reptiles kept as companion animals.

During 2014, 260 cases of salmonellosis were notified, corresponding to a crude incidence rate (CIR) of 5.7 per 100,000 population (figure 1). The annual CIR has remained consistently low over the last five years (2010-2014 mean: 6.8 per 100,000) compared to the previous five year (2005-2009: 9.3 per 100,000). The highest CIR in 2014 occurred in HSE-M (8.1) and the lowest in HSE-S (4.8).

The number of male cases was slightly higher than for females in 2014 (male: female ratio=1.3:1.0) which is consistent with previous years. Overall, the highest age-specific incidence rate was in children under 5 years of age (18.2) which is likely to be influenced by clinicians more readily seeking clinical samples in that age group. Specifically, the incidence rates were higher in males than females in all age groups less than 45 years old. Incidence rates were higher in females for those aged 45-54 years while the rates were comparable for both sexes in those aged over 55 years.

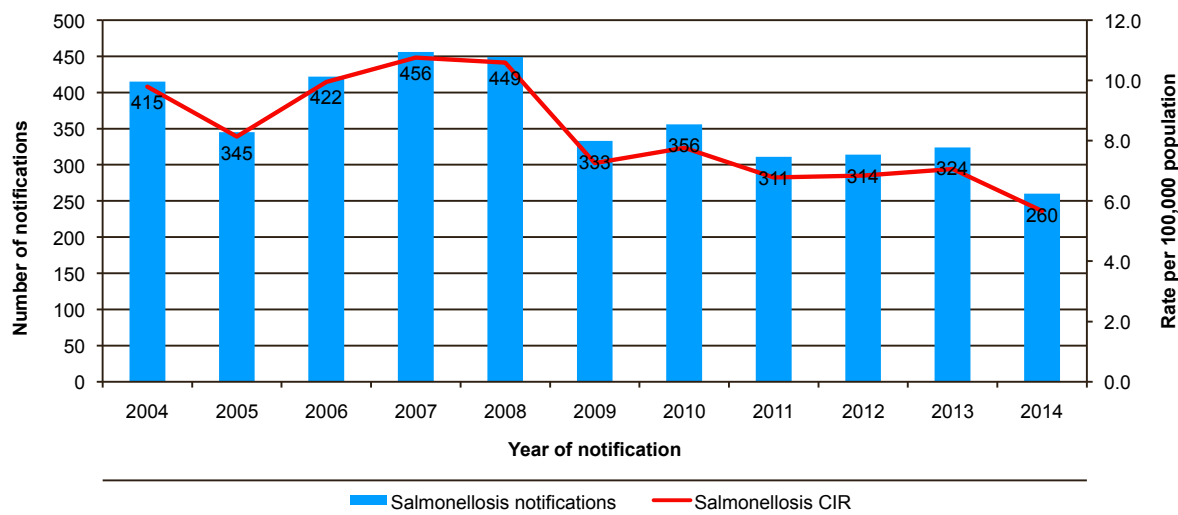


Figure 1: Salmonellosis notifications and CIR by year of notification [Data source: CIDR]

National *Salmonella*, *Shigella* and *Listeria* Reference Laboratory (NSSLRL) data:

The National *Salmonella*, *Shigella* and *Listeria* Reference Laboratory (NSSLRL) based in Galway has been providing reference services nationally since 2000. In 2014, the NSSLRL analysed 258 human non-typhoidal *Salmonella* isolates referred for further typing. Figure 2 shows the trend in referral of isolates to NSSLRL by organism over time.

The NSSLRL conducted phage typing analysis on all 107 *S. Typhimurium* and all 44 *S. Enteritidis* isolates. Phage type DT193 (n=26) comprised over 24.3% of all *S. Typhimurium* strains. Other currently important *S. Typhimurium* phage types included Untypable (16.8%) and DT104 (8.4%). Phage types PT8 (20.5%), PT14b (15.9%), and PT1 (13.6%) were the most common types observed among *S. Enteritidis* isolates.

Of the 258 isolates analysed for antimicrobial

resistance, 139 (53.9%) were fully susceptible to all antimicrobials tested. The remaining 119 isolates exhibited some degree of antimicrobial resistance, 43 of which exhibited resistance to five or more antimicrobials among 27 antibiograms. The majority of isolates exhibiting this level of resistance were *S. Typhimurium* (67.4% of multi-drug resistant isolates). Overall, the commonest resistance pattern seen was resistance to ampicillin, streptomycin, sulphadiazine and tetracycline (ASSuT, n=26, 10.1% of isolates). The ASSuT pattern was almost exclusively identified in *S. Typhimurium* isolates (96.2% of resistant isolates). Resistance to nalidixic acid and ciprofloxacin (NaCp, n=18, 7.0% of isolates) was the second most common AMR profile among all isolates. The NaCp pattern was mostly seen in *S. Enteritidis* isolates (68.4% of resistant *S. Enteritidis* strains).

The NSSLRL's Annual Report 2014 provides a more detailed analysis of clinical *Salmonella* typing results

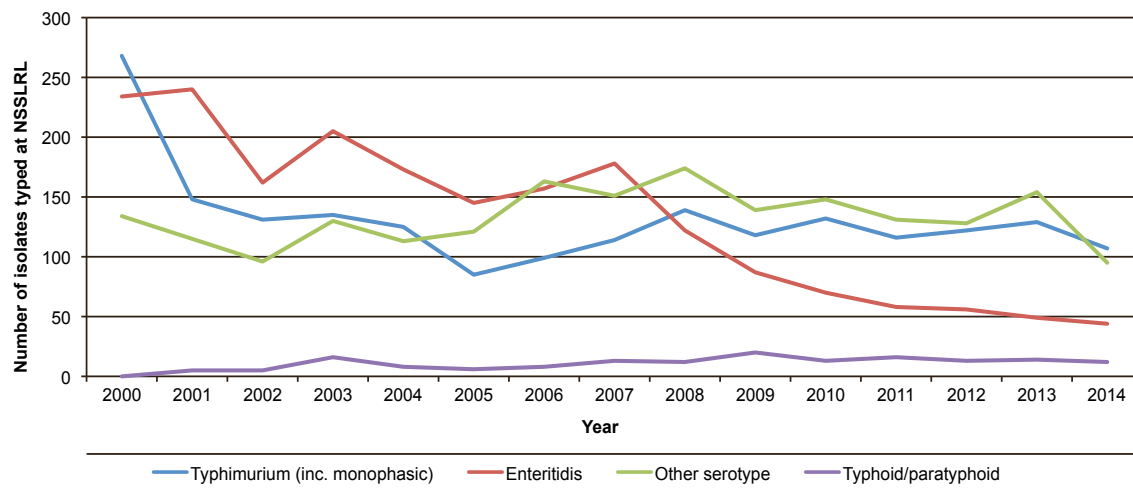


Figure 2. Annual number of *Salmonella* isolates referred to NSSLRL by serotype [Data source: NSSLRL]

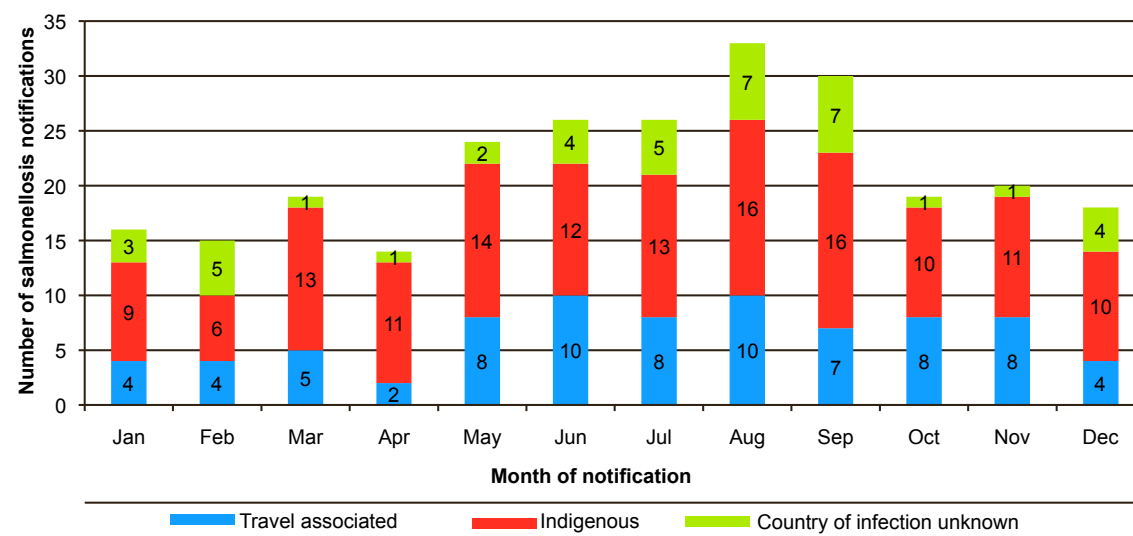


Figure 3: *Salmonellosis* notifications by month of notification and travel history, 2014 [Data source: CIDR]

and a comparison with isolates from non-human sources.¹

Foreign travel as a risk factor for salmonellosis in Ireland

Country of infection was reported for over 81% of notifications in 2014. Where country of infection was reported, 37.0% of cases were travel associated. The number of travel associated cases peaked during the period May to August while indigenous cases peaked during August and September (Figure 3). Among travel associated cases, the most common countries of infection reported were: Spain (n=18), Thailand (n=8) and Poland (n=5). The popularity of a country as a travel destination is likely to be an important factor in determining the number of cases associated with each country.

When serotyping data were analysed by travel history, over half of all indigenous cases were infected with *S. Typhimurium* (or monophasic *S. Typhimurium*), with 'Other' serotypes making up a further 34.8% of cases. In contrast, *S. Enteritidis* features more prominently among travel-associated cases (29.5%) with just 10.6% of indigenous cases due to *S. Enteritidis* (table 1).

Outbreaks

During 2014, eight outbreaks of salmonellosis were reported, comprising 20 cases of illness, three of whom were hospitalised. Five family outbreaks occurred in private houses and one family outbreak was travel related. Two general outbreaks occurred in community settings. Two outbreaks were reported as being foodborne, four were reported as due to person to person spread while mode of transmission for the remaining two outbreaks was reported as unknown.

In consequence of the increasing recognition in recent years of fresh produce as a cause of gastrointestinal disease outbreaks, the National *Salmonella* Outbreak Trawling Questionnaire was recently expanded and updated. The form is available at <http://www.hpsc.ie/A-Z/Gastroenteric/Salmonellosis/SurveillanceInvestigativeForms/>

Typhoid/Paratyphoid:

In 2014 there were seven cases of typhoid notified and five cases of paratyphoid (3 Paratyphi A and 2 Paratyphi B). Of the seven *S. Typhi* cases, two had travelled to India and one each to Bangladesh, Qatar and Tanzania. The remaining two typhoid cases did not report country of infection. Among the paratyphoid cases, one each reported travel to Bolivia, Cambodia and Peru. The remaining two paratyphoid cases did not report country of infection.

References:

1. National *Salmonella* Reference Laboratory of Ireland, Annual Report for 2014. Available at: http://www.nuigalway.ie/research/salmonella_lab/reports.html

Table 1: *Salmonellosis* notifications by serotype and travel history, 2014 [Data source: CIDR]

<i>Salmonella</i> serotype	Indigenous		Travel associated		Travel history unknown	
	Number	%	Number	%	Number	%
<i>S. Typhimurium</i>	77	54.6	19	24.4	14	34.1
<i>S. Enteritidis</i>	15	10.6	23	29.5	6	14.6
Other serotypes	49	34.8	36	46.2	21	51.2
All serotypes (n)	141	100.0	78	100.0	41	100.0