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Annual Epidemiological Report

November 2018

Shigellosis in Ireland, 2017

Key Facts

- 18% increase in case numbers since 2016
- Median age 32 years
- 24% of cases hospitalised
- Higher incidence reported by HSE-East
- Increasing number and proportion of *Shigella* isolates exhibiting resistance to Ciprofloxacin and Azithromycin
- Foreign travel, in particular to Africa and Asia, now presents a major risk factor for shigellosis in Ireland, especially among children and adult females.
- Increasing proportion of adult male cases, with MSM as a risk factor most likely contributing to this increase
- National protocols for the public health management of sexually acquired shigellosis cases have been agreed, advice has been developed for preventing sexually acquired shigellosis and from mid-2018 onwards, sexual risk factor data for shigellosis notifications will be collected to more effectively monitor this trend.

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Background

Shigellosis is a diarrhoeal illness caused by the bacterium *Shigella*. There are four species of this bacterium: *S. sonnei*, *S. boydii*, *S. flexneri* and *S. dysenteriae*. *S. dysenteriae* produces a very powerful toxin that induces severe damage to the lining of the gut. This bacterium is only found in humans. Anyone can get shigellosis, but those who are at greater risk include children in child care centres and their parents, overseas travellers, institutionalized people and men who have sex with men (MSM).

Methods

Disease notification

Shigellosis is a notificable disease in Ireland under the Infectious Disease Regulations and cases should be notified to the Medical Officer of Health. Notifications are reported using the Computerised Infectious Disease Reporting system (CIDR) which is described here. Further information on the process of reporting notifiable infectious diseases is available here. The case definition in use in 2017 is available here.

For this report, data on cases notified to CIDR in 2017 were extracted from CIDR as of 21st August 2018. In 2017, with an impending change in the case definition to facilitate the reporting of PCR positive culture negative cases as 'probable' cases (this change was not officially implemented until August 2018), the HSE-SE accepted eight PCR positive culture negative cases as notifications and also entered them on CIDR in 2017, although not officially included in the case definition. These eight cases are excluded from the main analyses below.

Typing of *Shigella* isolates

The National *Salmonella*, *Shigella* and *Listeria* Reference Laboratory (NSSLRL) undertake serotyping, and antimicrobial resistance profiling on all *Shigella* isolates referred from primary laboratories. Typically, isolates from around 80-90% of notified cases are referred annually. Since 2017, the NSSLRL has also introduced whole genome sequencing (WGS) for *Shigella*, increasing the sensitivity and specificity of cluster detection.

Results

Basic epidemiology

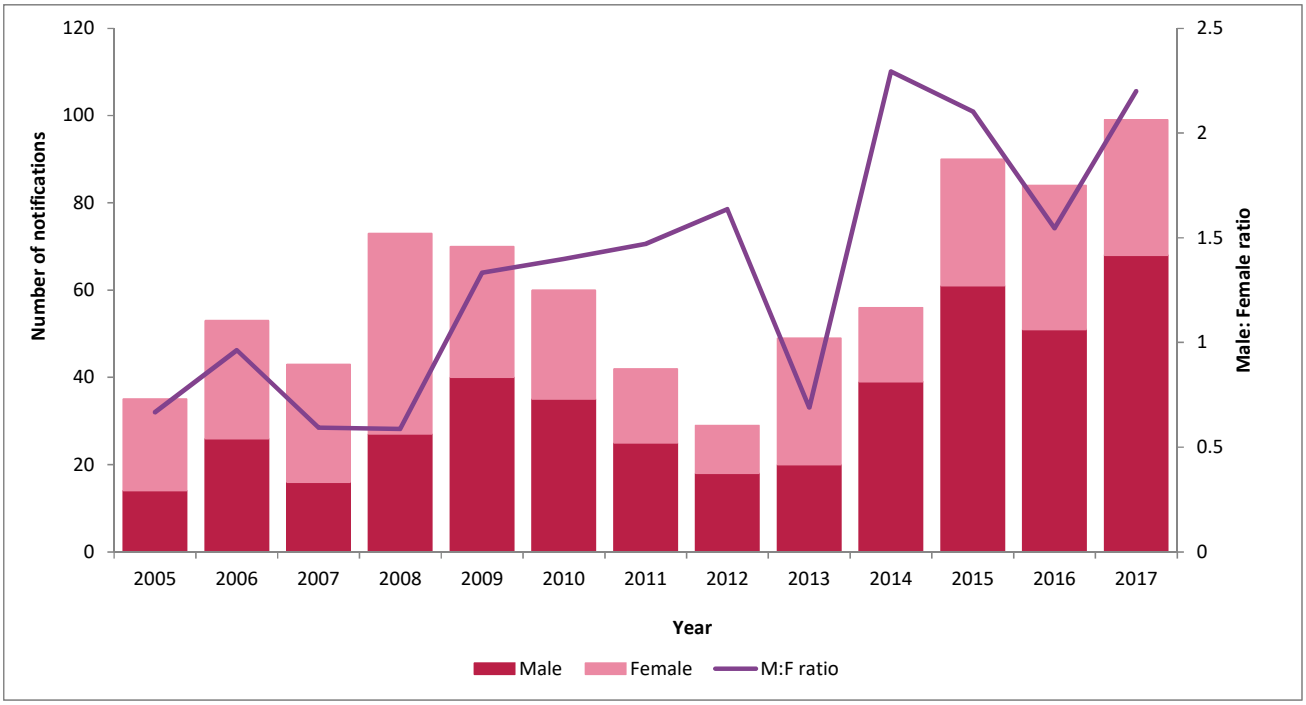
Ninety-nine cases (97 confirmed and two probable cases) meeting the shigellosis case definition were notified in Ireland in 2017, corresponding to a crude incidence rate (CIR) of 2.1 per 100,000. This represents an increase of 18% compared to 2016. Twenty-three (24%) were reported as hospital in-patients (of 96 cases where hospitalisation status was recorded).

The median age was 32 years (range 12 months to 80 years); 68% (n=68) of cases were male. Among cases between 25 and 44 years, 78% (38/49) of cases were male (Figure 1).

Seventy cases (71%) were notified from HSE-E with the remaining 29 cases reported from the other seven HSE-areas.

In the last three years, there was a particularly large increased in notifications; this is most pronounced among males, in particular adult males.

Figure 1. Annual number of notifications of shigellosis by sex and year, Ireland 2004-2017



Data source: CIDR

Country of infection and infecting species

Data on country of infection was available for 75% of shigellosis notifications (Table 1). Thirty-five cases (47% of known) were reported as being associated with foreign travel to 22 different countries. Forty cases were reported as being acquired in Ireland (53% of known), while no country of infection information was available for 24 cases.

S. sonnei was the most common species reported (n=43), followed by *S. flexneri* (n=34), both of which were commonly associated with acquisition in Ireland.

Table 1. Number of *Shigella* notifications by species and country of infection, Ireland 2017

Species	Ireland	Other Europe	Asia	Africa	Other	UNK/Not specified	Total
S. sonnei	20	2	4	3	6	8	43
S. flexneri	17	0	1	4	5	7	34
S. dysenteriae	1	0	0	3	0	1	5
S. unidentifiable	0	0	1	0	0	0	1
S. boydii	0	0	1	0	0	0	1
S. species	2	0	5	0	0	6	13
Probable -epi	0	0	0	0	0	2	2
Total	**40**	**2**	**12**	**10**	**11**	**24**	**99**

Data source: CIDR

Serotype and antimicrobial resistance

Eighty-four *Shigella* isolates (87% of *Shigella* isolates recovered in primary hospital laboratories in Ireland) were referred for typing from clinical laboratories in Ireland to the National *Salmonella, Shigella* and *Listeria* Reference Laboratory in Galway (Table 2).

An increasing proportion of isolates are exhibiting resistance to Ciproxacin (38%) and Azithromycin (25%).

Table 2: Serotype and AMR profile of Irish *Shigella* isolates referred to NSSLRL in 2017

Serotype	Number by serotype	AMR profile	Number by serotype and AMR pattern
Shigella boydii	2	ASuTTmCtx	1
		SuTTm	1
Shigella dysenteriae	4	ACSuTm	1
		ACSuTTm	1
		ASuTm	1
		ASuTTm	1
***Shigella flexneri* 1b**	5	ACSuTTm	3
		ACT	2
***Shigella flexneri* 1c**	3	ASuTTmAzt	2
		T	1
***Shigella flexneri* 2**	1	ACSuTTmNa	1
***Shigella flexneri* 2a**	17	ACSuTTm	1
		ACSuTTmAzt	3
		ACSuTTmNaCp	1
		ACSuTTmNaCpCtx	3
		ACT	1
		ACTTm	1
		ACTTmNaCp	5
		ATmNaCp	1
		None	1
***Shigella flexneri* 2b**	3	ACT	2
		ACTTm	1
***Shigella flexneri* 3b**	2	ACSuTTm	1
		Na	1
Shigella flexneri 4	1	ASuTTm	1
Shigella flexneri 5b	1	ASuTTm	1
***Shigella flexneri* 6**	1	ASuTTm	1
Shigella sonnei	44	ACSuTTm	2
		ASuTm	1
		ASuTmNaCpAzt	11
		ASuTTmAzt	1
		ASuTTmCtx	2
		ASuTTmNaCpAzt	3
		ASuTTmNaCpCtx	1
		ASuTTmNaCtx	1
		ASuTTmNaCtxAzt	1
		SuTTm	6
		SuTTmNa	2
		SuTTmNaCp	6
		Tm	6
		TmNaCp	1
Total	**84**		**84**

Outbreaks and clusters

Four outbreaks of shigellosis were notified in 2017, three family outbreaks and one general outbreak. The three family outbreaks were small in size (range 2-3 persons ill), with one associated with travel to India. The general outbreak caused illness among 23 persons who attended an extended family gathering, and included visitors from abroad. Seven cases were culture confirmed as being infected with *Shigella sonnei* and a further two were laboratory confirmed by PCR only. The outbreak was suspected to be foodborne, but a source was not identified.

A further two shigellosis clusters were identified following whole genome sequencing of *Shigella* isolates referred to NSSLRL. The first was a cluster of *S. sonnei* ASuTmNaCpAzt (or ASuTTmNaCpAzt) with cases initially identified in June 2017.[1] In 2017, there were 14 cases in total in the cluster, 13 of whom were adult males. Person-to-person transmission between MSM is suspected to be a major contributor to transmission in the cluster. Cases have continued to appear in 2018. The second cluster is a small *S. flexneri* cluster among adult males; it is possible that MSM also plays a role in transmission within this cluster.

Discussion and Public Health Implications

Compared with the early 1990s, shigellosis has declined substantially in Ireland, with improvements in food hygiene and drinking water provision. Foreign travel, in particular to Africa and Asia, now presents a major risk factor for shigellosis in Ireland, especially among children and adult females. Foodborne transmission has a continuing minor role, as evidenced by the reporting of a suspected foodborne general outbreak this year, and of a cross-border foodborne general shigellosis outbreak in 2016.[2]

However, a rapidly increasing incidence among adult males and outbreaks among MSM reflect an emerging risk in this population.[3] In recognition of this, national protocols for the public health management of sexually acquired shigellosis cases have been agreed, advice has been developed for preventing sexually acquired shigellosis and from mid-2018 onwards, sexual risk factor data for shigellosis notifications will be collected to more effectively monitor this trend.[3]

More detailed typing of *Shigella* isolates can provide useful information on the relatedness of strains which is used by public health personnel to outrule/provide evidence for links between cases during investigations of case clusters. During 2017, 87% of *Shigella* isolates recovered in primary hospital laboratories in Ireland were referred for typing at the NSSLRL in Galway. The use of WGS to characterise isolates has been key in confirming the existence of a number of important clusters and in outruling links in other instances, demonstrating the importance of referral of all *Shigella* isolates for typing.[4]

Referral of isolates to the NSSLRL is also key for monitoring trends in antimicrobial resistance. Notably, an increasing number and proportion of *Shigella* isolates referred for typing are exhibiting resistance to Ciprofloxacin and Azithromycin, limiting options for therapy or prevention of transmission.[4]

Further information available on HPSC website

Further information about shigellosis is available at http://www.hpsc.ie/a-z/gastroenteric/shigellosis/

Publications on shigellosis in Ireland available at http://www.hpsc.ie/a-z/gastroenteric/shigellosis/guidancepublications/articles/

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References

1. Beatty, K et al. 2018. Cluster of cases of multi-drug resistant Shigella notified amongst MSM, June 2017 - Epi-Insight, Volume 18, Issue 11, November 2017
2. O'Brien S, et al. 2018. Investigation of a foodborne outbreak of Shigella sonnei in Ireland and Northern Ireland: the roles of cross-border collaboration and commercial sales data. Abstract accepted for 3 minute magic presentation RCPI Winter Scientific Meeting. 2018
3. Garvey, P et al 2018. Shigellosis in Ireland: Re-Emergence in a New Risk Group. Abstract accepted for oral presentation at ESCAIDE 2018
4. National *Salmonella Shigella* & *Listeria* Reference Laboratory of Ireland, Annual Report for 2017. Available at: http://www.saolta.ie/documents/nsslrl-annual-report-2017