National Public Health Organization

Department of Epidemiological Surveillance and Intervention

EPIDEMIOLOGICAL DATA FOR SHIGELLOSIS IN GREECE

2004-2018

MANDATORY NOTIFICATION SYSTEM

NATIONAL REFERENCE CENTRE FOR *SALMONELLA* AND *SHIGELLA*

Key Points

- The notification rate of shigellosis in Greece is low.
- Based on data for the 2004-2018 period:
- The mean annual number of reported cases was low (61, SD=29)
- A seasonal pattern was apparent; the mean monthly notification rate increased during summer months, reaching a peak in August
- The disease was more frequent among children, especially in the age group of 0-4 years
- 8% of the cases were travel-related
- 51% of the notified cases were Roma

Shigellosis, also called bacillary dysentery, is a foodborne disease caused by the bacteria of the genus *Shigella*. *Shigella* comprises of 4 species or serogroups: *S. dysenteriae* (Group A), *S. flexneri* (Group B), *S. boydii* (Group C) and *S. sonnei* (Group D) [1].

The incubation period of the disease is usually 1-3 days, and may range from 12 to 96 hours; for *S. dysenteriae* it can be up to one week [1].

The pathogen can cause both sporadic cases and outbreaks [2]. In Greece, shigellosis is a mandatory notifiable disease.

Time trend

The number of reported cases with the respective notification rate per year, for the period 2004-2018, are shown in **Table 1**. The temporal distribution of shigellosis notification rate for the same years is depicted in **Graph 1**. The annual notification rate ranged from 1.7 cases in 2008 to 10.9 cases per 1,000,000 population in 2013. The mean annual notification rate for the period 2004-2018 was 5.6 cases per 1,000,000 population and the mean annual number of reported cases was 60.8 (standard deviation: 29.4).

Age and gender distribution

For the period 2004-2018, the disease had a higher mean annual notification rate in the age group 0-4 years (63.0 cases per 1,000,000 population), followed by the age group of 5-14 years (14.4 cases per 1,000,000 population) (**Graph 2**).

During the same period, the mean annual notification rate did not differ between males (5.6 cases/1,000,000 population) and females (5.4 cases/1,000,000 population).

Seasonality

The mean monthly notification rate for the period 2004-2018, was increased during summer, reaching a peak in August, and remained high during autumn (**Graph 3**).

Geographical distribution

The geographical region of Western Greece had the highest mean annual notification rate (11.7 cases per 1,000,000 population), while the lowest rate was noted in the area of Southern Aegean (0.2 cases per 1,000,000 population).

Laboratory data

During 2004-2018, *S. flexneri* and *S. sonnei* were the most frequently notified species of *Shigella.* Only five cases of *S. dysenteriae* were identified during this period. A high percentage of strains were not further classified at the Reference Center for *Shigella*. Frequency distribution of *Shigella* species, for the years 2004-2018, is presented in **Table 2**.

It should be noted that the presented data here regard the cases reported via the mandatory notification system. For some of them the respective information from the reference laboratory is available while for others it is not. Data on the total number of isolates sent at the Reference Laboratory can be found at: http://www.mednet.gr/whonet/.

Risk factors

For the period 2004-2018, 469 (51%) of the notified cases were Roma. One hundred and sixty of the 810 notified cases (20%), for which the respective information was available, reported the presence of another person with similar symptoms among their contacts, whereas 55 (8%) cases had recently travelled abroad (during incubation period). One outbreak among refugees/migrants was reported in 2015 in Attica [3].

Discussion

The notification rate of shigellosis in Greece is low (7.4 cases per 1,000,000 population for the year 2017). The high incidence among Roma indicates the need for public health measures targeting at this specific population. The mean notification rate of shigellosis in the EU and the EEA/EFTA countries was 16.6 cases per 1,000,000 population for the year 2017 [4]. When interpreting these data, the surveillance systems' probable under-reporting should be taken into account. The seasonal and age distribution agrees with that reported by other European countries [4].
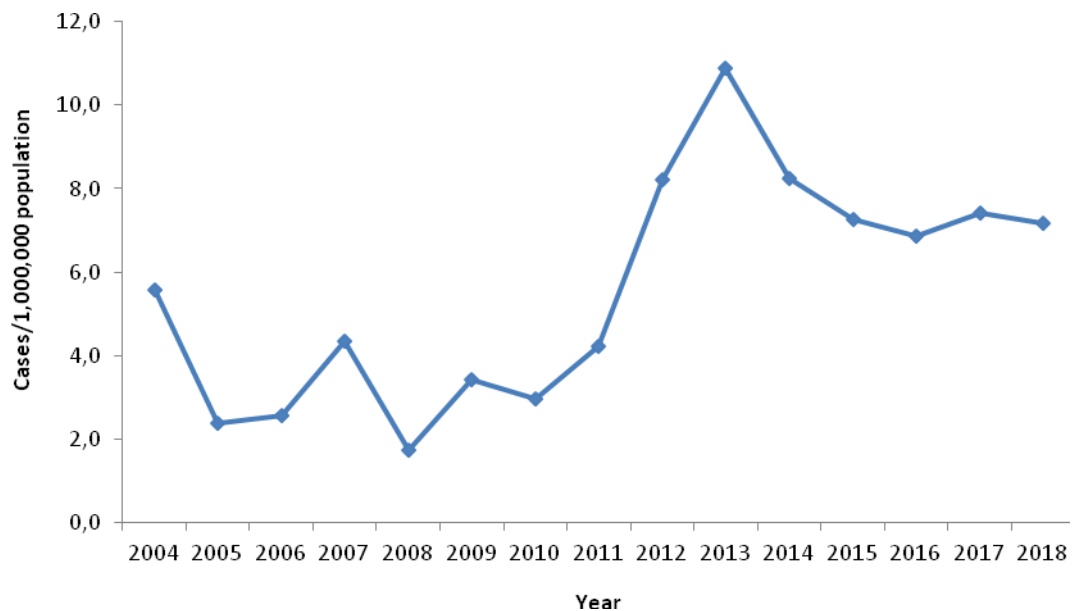
References

1. Heymann D, MD. Control of Communicable Diseases Manual. 20th Edition, 2015, American Public Health Association.

2. The Community Summary Report on Trends and Sources of Zoonoses and Zoonotic Agents and Food-borne Outbreaks in the European Union in 2008. The EFSA journal 2010; Available from: http://www.efsa.europa.eu/en/efsajournal/doc/1496.pdf

3. Georgakopoulou T, Mandilara G, Mellou K et al. Resistant Shigella strains in refugees, August-October 2015, Greece. Epidemiol Infect. 2016, 16:1-5.

4. European Centre for Disease Prevention and Control. Surveillance Atlas of Infectious Diseases. Shigellosis – Data by Country and Year. Current time period: 2017. Available from: http://ecdc.europa.eu/en/data-tools/atlas/Pages/atlas.aspx
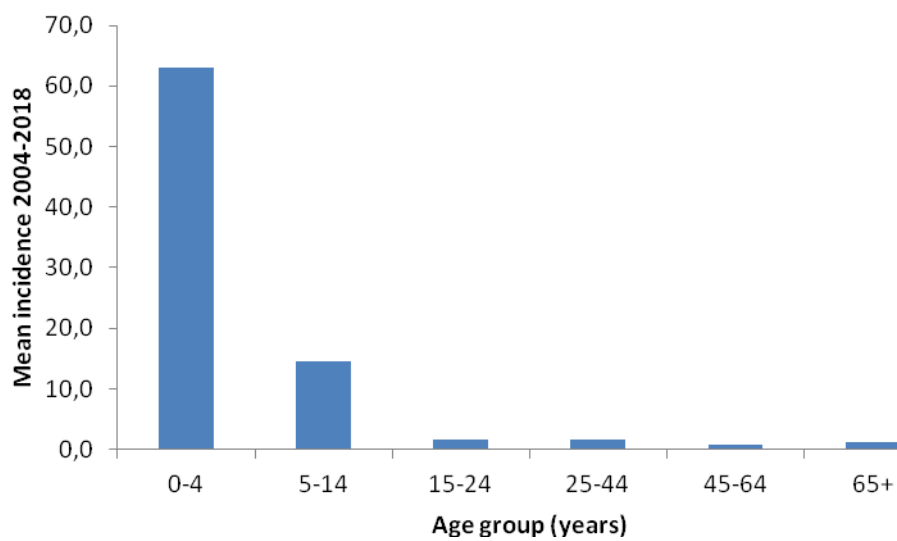
Table 1. Annual number of notified cases and notification rate of shigellosis, Mandatory Notification System & National Reference Centre for *Salmonella* and *Shigella*, Greece, 2004-2018.

| Year	Number of cases	Annual notification rate (per 1,000,000 population)
2004	61	5.6
2005	26	2.4
2006	28	2.5
2007	48	4.3
2008	19	1.7
2009	38	3.4
2010	33	3.0
2011	47	4.2
2012	91	8.2
2013	120	10.9
2014	90	8.2
2015	79	7.3
2016	74	6.9
2017	80	7.4
2018	78	7.2
Total	**912**	**5.6***

*Mean annual notification rate for the period 2004-2018

Graph 1. Time trend of shigellosis notification rate (cases/1,000,000 population), Mandatory Notification System & National Reference Centre for *Salmonella* and *Shigella*, Greece, 2004-2018.

Graph 2. Mean annual incidence (cases/1,000,000 population) of shigellosis by age group, Mandatory Notification System & National Reference Centre for *Salmonella* and *Shigella*, Greece, 2004-2018.
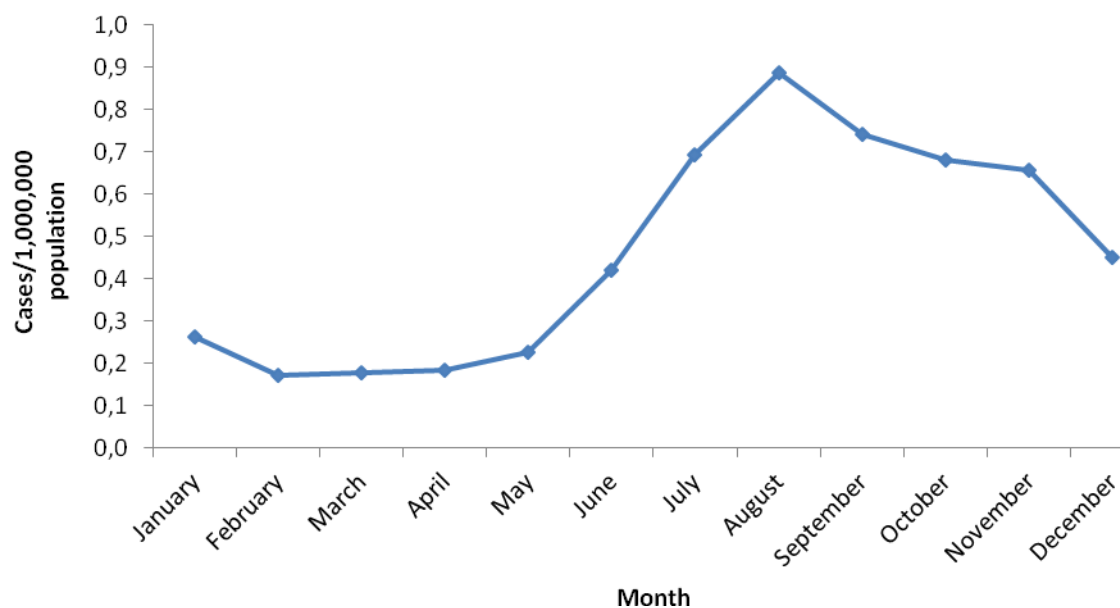
Graph 3. Mean monthly notification rate (cases/1,000,000 population) of shigellosis, Mandatory Notification System & National Reference Centre for *Salmonella* and *Shigella*, Greece, 2004-2018.

Table 2. Frequency distribution of *Shigella* species, Mandatory Notification System & National Reference Centre for *Salmonella* and *Shigella*, Greece, 2004-2018.

	S. flexneri	*S.* sonnei	*S.* boydii	*S.* dysenteriae	Unknown	Total
	n (%)	n (%)	n (%)	n (%)	n (%)	n (%)
2004	19 (31)	13 (21)	1 (2)	0 (0)	28 (46)	61 (100)
2005	8 (30)	11 (42)	1 (4)	0 (0)	6 (24)	26 (100)
2006	4 (15)	2 (7)	1 (4)	0 (0)	20 (74)	27 (100)
2007	4 (8)	23 (49)	0 (0)	0 (0)	20 (43)	47 (100)
2008	7 (50)	1 (7)	0 (0)	0 (0)	6 (43)	14 (100)
2009	17 (50)	1 (3)	1 (3)	0 (0)	15 (44)	34 (100)
2010	17 (63)	2 (8)	0 (0)	2 (7)	6 (22)	27 (100)
2011	16 (37)	1 (2)	1 (2)	0 (0)	26 (59)	44 (100)
2012	27 (30)	1 (1)	0 (0)	0 (0)	63 (69)	91 (100)
2013	54 (49)	27 (25)	0 (0)	1 (1)	28 (25)	110 (100)
2014	37 (43)	19 (22)	1 (1)	0 (0)	30 (34)	87 (100)
2015	45 (61)	18 (24)	4 (5)	2 (3)	5 (7)	74 (100)
2016	29 (41)	12 (17)	4 (6)	0 (0)	25 (36)	70 (100)
2017	25 (33)	31 (41)	1 (1)	0 (0)	18 (24)	75 (100)
2018	25 (39)	21 (32)	2 (3)	0 (0)	17 (26)	65 (100)

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