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## FOODBORNE BOTULISM IN POLAND IN 2013\*

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### ABSTRACT

**OBJECTIVES.** The aim of the study is to assess the epidemiology of foodborne botulism in Poland in 2013.  
**MATERIALS AND METHODS.** We reviewed surveillance data published in the annual bulletin “Infectious diseases and poisonings in Poland in 2013” and in previous publications, and botulism case reports for 2013 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations.  
**RESULTS.** In 2013, a total of 24 foodborne botulism cases (including 8 laboratory confirmed cases) was reported, corresponding to the lowest annual incidence rate (0.06 per 100,000 population) since the introduction of botulism as mandatory notifiable disease. The highest incidence in the country was reported in Kujawsko-Pomorskie (0.19). Incidence in rural areas (0.09 per 100,000 population) was more than 2-fold higher than the incidence in urban areas (0.04). Men, had more than 3 times higher incidence than women; the highest incidence rate (0.29 per 100,000 population) was observed among men in the age group of 40-49 years. Most cases were associated with consumption of different types of commercially canned meat. Commercially canned fish was also a common vehicle. All cases were hospitalized. No deaths related to the disease were reported.  
**CONCLUSIONS.** In 2013, in Poland a downward trend in the incidence of foodborne botulism was maintained. Insufficient laboratory capacity remains a major weakness in national surveillance resulting in disproportionate reporting of cases meeting only clinical criteria and an epidemiological link. This situation clearly speaks for the need to improve laboratory capacity for surveillance.

**Keywords:** *foodborne botulism, food poisoning, epidemiology, Poland, 2013*

The aim of this article is to assess the epidemiology of foodborne botulism in Poland in 2013 compared to previous years, using national surveillance data.

### MATERIALS AND METHODS

We reviewed surveillance data from the following sources:

- annual bulletin “Infectious diseases and poisonings in Poland” for the years 2007-2013 (NIPH-NIH, GIS, Warsaw);
- botulism case reports for 2013 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations.

In Polish surveillance system cases of foodborne botulism are classified as “confirmed” or “probable” based on definitions published in Commission Decision 2008/426/EC laying down case definitions for reporting

communicable diseases in EU. However, given limited laboratory capacity, Poland also permits use of case category “possible” for the cases reported by physicians based on clinical symptoms (with no laboratory confirmation). This corresponds to previous practices in the country and thus maintains the comparability of long-term data.

Definitions used in the routine surveillance in 2013 are available on the website of the National Institute of Public Health - National Institute of Hygiene [http://wwwold.pzh.gov.pl/oldpage/epimeld/inne/Def\\_PL2\\_2a.pdf](http://wwwold.pzh.gov.pl/oldpage/epimeld/inne/Def_PL2_2a.pdf).

In 2013, previous requirement for physicians to report cases of foodborne botulism was reintroduced (Dz. U., 2013, poz. 848). In authors opinion, recent changes in legislation on disease surveillance system, did not affect disease notification. Even after 2008 with legislation gap on mandatory physician reporting of notifiable diseases in Poland, physicians did not stop reporting of foodborne botulism or other diseases, which were under national surveillance since decades.

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## RESULTS

In 2013, in Poland, the downward trend of foodborne botulism remained unchanged - a total of 24 cases were reported (2 more than in 2012, but about 11 less than the median annual number of cases for years 2007 to 2011 (Tab I.). Annual incidence - 0.06 per 100 000 population - was the lowest since the introduction of botulism as mandatory notifiable disease in Poland (Fig. 1).

Cases of foodborne botulism in 2013 were reported in 14 provinces (Tab. I). Most cases (and the highest incidence in the country - 0.19 per 100 000 population) was reported in Kujawsko-Pomorskie; in Opolskie and Świętokrzyskie no foodborne botulism cases have been reported in 2013.

In 2013, as in previous years, most cases (15 cases; about 63%) were classified as 'possible' and reported by physicians based on clinical symptoms and epidemiological link e.g. information about consumption before onset

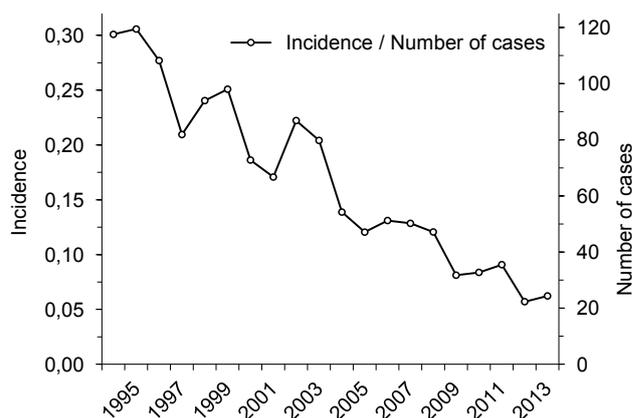


Fig. 1. Foodborne botulism in Poland. Number of cases and incidence (per 100.000 population), 1994-2013

of symptoms potentially improperly canned / pasteurized products. Laboratory-confirmed cases (detection of botulinum toxin in a clinical specimen taken from the patient) accounted for only 33% of the total number of reported

Table I. Foodborne botulism in Poland. Number of cases and incidence (per 100.000 population) by province. 2007-2013

Province	Median 2007-2011		2012		2013	
	number of cases	incidence	number of cases	incidence	number of cases	incidence
POLAND	35	0.09	22	0.06	24	0.06
1. Dolnośląskie	1	0.03	-	-	1	0.03
2. Kujawsko-pomorskie	2	0.10	1	0.05	4	0.19
3. Lubelskie	6	0.28	5	0.23	1	0.05
4. Lubuskie	-	-	-	-	1	0.10
5. Łódzkie	-	-	-	-	1	0.04
6. Małopolskie	2	0.06	1	0.03	1	0.03
7. Mazowieckie	3	0.06	2	0.04	2	0.04
8. Opolskie	-	-	1	0.10	-	-
9. Podkarpackie	-	-	1	0.05	1	0.05
10. Podlaskie	1	0.08	2	0.17	2	0.17
11. Pomorskie	3	0.13	1	0.04	2	0.09
12. Śląskie	1	0.02	-	-	1	0.02
13. Świętokrzyskie	-	-	1	0.08	-	-
14. Warmińsko-mazurskie	2	0.14	-	-	2	0.14
15. Wielkopolskie	10	0.29	7	0.20	2	0.06
16. Zachodniopomorskie	2	0.12	-	-	3	0.17

Data source: Infectious diseases and poisonings in Poland (annual report). NIPH-NIH. CSI. Warsaw. 2007-2013

Table II. Foodborne botulism in Poland. Number of cases, incidence (per 100 000 population), and percentage of cases by age, gender and location (urban/rural). 2013

Age	Gender						Location						Total			
	men			women			urban			rural			number of cases	incidence	%	
	number of cases	incidence	%													
0 - 19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 - 24	1	0.07	5.3	1	0.08	20.0	2	0.13	20.0	-	-	-	2	0.08	8.3	
25 - 29	2	0.13	10.5	-	-	-	-	-	-	2	0.17	14.3	2	0.06	8.3	
30 - 39	3	0.10	15.8	1	0.03	20.0	2	0.05	20.0	2	0.09	14.3	4	0.06	16.7	
40 - 49	7	0.29	36.8	-	-	-	1	0.03	10.0	6	0.30	42.9	7	0.14	29.2	
50 - 59	3	0.11	15.8	-	-	-	1	0.03	10.0	2	0.10	14.3	3	0.05	12.5	
60 +	3	0.09	15.8	3	0.06	60.0	4	0.08	40.0	2	0.07	14.3	6	0.07	25.0	
Total	19	0.10	100.0	5	0.03	100.0	10	0.04	100.0	14	0.09	100.0	24	0.06	100.0	

Data source: botulism case reports for 2013 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations

Table III. Foodborne botulism in Poland. Number and percentage of cases by food vehicle and location (urban/rural). 2013

Suspected food vehicle		Urban		Rural		Total	
		n	%	n	%	n	%
Canned pork	commercial	1	10.0	1	7.1	2	8.3
	homemade	-	-	2	14.3	2	8.3
Different types of canned meat	commercial	2	20.0	4	28.6	6	25.0
	homemade	1	10.0	-	-	1	4.2
Canned fish	commercial	1	10.0	1	7.1	2	8.3
	homemade	1	10.0	1	7.1	2	8.3
Canned meat and vegetables	commercial	-	-	-	-	-	-
	homemade	-	-	2	14.3	2	8.3
Canned mushrooms, fruits and vegetables		-	-	-	-	-	-
Different kinds of commercial or home-canned foods		2	20.0	-	-	2	8.3
Sausages and cured meat products	commercial	1	10.0	1	7.1	2	8.3
	homemade	-	-	-	-	-	-
Meat dishes		1	10.0	1	7.1	2	8.3
Other		-	-	1	7.1	1	4.2
Not determined		-	-	-	-	-	-
Total		10	100.0	14	100.0	24	100.0

Data source: botulism case reports from 2013 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations

cases. In this group of patients, most commonly (4 cases) presence of toxin B was detected; in addition, one case was attributed to both toxin B and toxin E. Only one case was reported on the basis of clinical evidence and epidemiological link (exposure from the same source as laboratory-confirmed case) and classified as "probable".

In 2013, as in previous years, majority of cases were sporadic. Only one small household outbreak - involving 2 people - have been reported in Kujawsko-Pomorskie.

In recent years, due to decline in the number of cases reported annually, typical seasonal pattern of illness with the highest incidence in summer months, seems to disappear. In 2013, most cases occurred in April and June (Fig. 2).

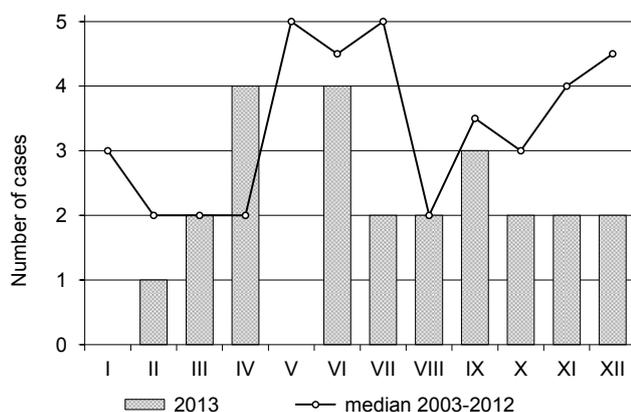


Fig. 2. Foodborne botulism cases in Poland by month of onset, 2003-2013

The incidence of foodborne botulism in rural areas (0.09 per 100,000) was overall more than 2-fold higher, than in urban areas (0.04) – with the largest 10-fold difference in the age group 40-49 years. As in previous years, men are more frequently affected than women – the incidence among men (0.10) was more than 3 times higher than among women (0.03); the highest incidence rate among men (0.29 per 100,000 population) was noted in age group 30 -39 years (Tab. II).

There were no reports of foodborne botulism in children or adolescents. The age of patients ranged from 21 to 73 years (median 45 years), but cases occurs predominately in age group 40-49 years (0.14 per 100,000 population).

Most cases – more than 45% - were associated with consumption of commercially or home canned meats, including pork. Commercially canned fish was also commonly implicated vehicle (Tab. III). Food vehicle however, was determined based on the information about consumption potentially improperly canned / pasteurized products before onset of the symptoms. In no case, food samples have been collected and tested.

The most common symptoms were blurred vision (96%), dry mouth (75%), difficulty swallowing (58%) and dropping eyelids (54%); gastrointestinal symptoms were also frequently reported, including vomiting (67%), constipation (46%), and diarrhea (33%) were also common.

More than 50% of cases (10 patients) with information on clinical course of illness had severe / sub-severe course of illness. All patients required hospitalization, the duration of hospitalization ranged from 3 to 71 days (median 13 days). According to the data of State Sanitary Inspection, there were no deaths related to the disease.

## SUMMARY AND CONCLUSIONS

In 2013, epidemiology of foodborne botulism in Poland remains stable. From national surveillance point of view, a major weakness remains insufficient laboratory capacity in the country resulting in disproportionate reporting of cases meeting only clinical criteria and an epidemiological link. This situation clearly speaks for the need to enhance laboratory capacity for surveillance.

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