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SALMONELLOSIS IN POLAND IN 2012

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ABSTRACT

AIM. The purpose of the study was evaluation of epidemiological situation of salmonellosis in Poland in 2012 compared to the previous years.

MATERIALS AND METHODS. The main source of data for this study are statistical overviews contained in the annual bulletins “Infectious Diseases in Poland in 2012,” (NIZP-PZH, GIS, Warsaw 2013), reports from investigations obtained from the sanitary epidemiological stations. Information on deaths due to infectious and parasitic diseases registered in Poland in 2012 and earlier years is based on the data from the Department for Demographic Research of Central Statistical Office. For the purpose of surveillance cases were classified according to the case definition.

RESULTS. In Poland in 2012, it was reported a total of 8 444 cases of zoonotic salmonellosis including 8 267 cases of intestinal salmonellosis and 177 of extraintestinal one. The incidence was 21.9/100 000. The criteria for a confirmed case met more than 94% of cases. The number of reported cases was lower than in 2011, reflecting the continued downward trend in the number of cases of salmonellosis in Poland. A very high percentage (69.4 %) hospitalizations of people infected with zoonotic *Salmonella* remains. In outbreaks proportion of hospitalizations accounted for one third of the cases. Predominated children under the age of 5 years. Seven people died of salmonellosis. In 2012, it was reported 181 outbreaks caused by *Salmonella* in which 1 511 people still. They were mostly small family outbreaks. The most common etiological agent of salmonellosis in Poland is *S. Enteritidis*, but slightly increases the percentage cases, for which no serologic type was determined. In 2012 it stood at 14%. This proportion was highest in the Pomorskie province and amounted to 58%.

CONCLUSIONS. Keeping up for more than 10 years in the percentage of salmonellosis hospitalization rate at 70%, indicates underreporting of the disease in the country and mostly detection of the cases requiring hospital treatment. Growing proportion of *Salmonella* that are not serotyped, reaching in some regions more than 30% indicates problems with laboratory diagnostics salmonellosis.

Key words: *salmonellosis, intestinal salmonellosis, parenteral salmonellosis, epidemiology, Poland, 2012*

Among the bacterial diseases with gastroenteritis, notifiable in Poland, salmonellosis is still the most commonly reported one. It is a different situation than in the other EU countries, where in recent years the major cause is *Campylobacter*. In Poland, apart from intestinal salmonellosis, also extraintestinal one is a subject of obligatory registration.

The aim of the study is to assess the epidemiological situation of salmonellosis in Poland in 2012, compared with the previous years.

MATERIAL AND METHODS

The analysis of the epidemiological situation of salmonellosis in Poland in 2012, was based on the data from the annual bulletin “Infectious diseases and poisonings in Poland in 2012” (NIPH-NIH, GIS, Warsaw 2013). In addition, were used data submitted to NIPH-NIH by regional sanitary-epidemiological stations, in particular: reports from epidemiological investigations in outbreaks and information from the laboratories of sanitary-epidemiological stations. Classification of cases of intestinal salmonellosis is based on the case

Table I. Salmonellosis in Poland in 1985-2012. Number of cases, incidence per 100 000 population, percentage of hospitalization and number of deaths

Year	Intestinal salmonellosis ¹⁾			Extraintestinal salmonellosis ²⁾			Total			
	No. of cases	Incidence rate	% hosp.	No. of cases	Incidence rate	% hosp.	No. of cases	Incidence rate	% hosp.	No. of death
1985-1989 ³⁾	26 622	70.7	37.9	22 726	67.5	48.7	49 242	130.7	42.9	17
1990	28 352	74.4	43.6	21 155	55.5	44.9	49 507	129.9	44.2	16
1991	31 144	81.4	46.4	20 983	54.9	47.1	52 127	136.3	46.7	12
1992	24 558	64.0	49.5	17 503	45.6	50.0	42 061	109.6	49.7	8
1993	19 220	50.0	47.4	11 934	31.0	48.8	31 154	81.0	47.9	6
1994	36 277	94.1	47.6	67	0.17	94.0	36 344	94.3	47.6	5
1995	30 029	77.8	49.7	64	0.17	85.9	30 093	78.0	49.8	3
1996	26 052	67.5	52.1	54	0.14	88.9	26 106	67.6	52.2	8
1997	23 157	59.9	53.7	49	0.13	93.9	23 206	60.0	53.8	3
1998	26 675	69.0	52.7	64	0.17	95.3	26 739	69.2	52.8	3
1999	23 381	60.5	62.7	55	0.14	83.6	23 436	60.6	62.8	7
2000	22 712	58.8	64.9	87	0.23	93.1	22 799	59.0	65.0	6
2001	19 788	51.2	66.7	93	0.24	88.2	19 881	51.5	66.8	5
2002	20 575	53.8	67.8	113	0.30	91.2	20 688	54.1	68.0	7
2003	16 496	43.2	72.5	121	0.32	90.1	16 617	43.5	72.7	6
2004	15 818	41.4	70.7	140	0.37	89.3	15 958	41.8	70.8	6
2005	15 815	41.4	70.1	191	0.50	91.1	16 006	41.9	70.3	8
2006	13 210	34.6	71.3	152	0.40	94.7	13 362	35.0	71.6	4
2007	11 568	30.3	70.4	136	0.36	93.4	11 704	30.7	70.6	1
2008	9 478	24.9	70.6	130	0.34	90.8	9 608	25.2	70.8	6
2009	8 855	23.2	69.3	117	0.31	93.2	8 972	23.5	69.6	6
2010	9 549	25.0	69.7	183	0.48	86.3	9 732	25.5	70.0	4
2011	8 652	22.5	69.4	161	0.42	93.2	8 813	22.9	69.9	3
2012	8 267	21.5	69.0	177	0.46	89.3	8 444	21.9	69.4	7

1) change in registration: until 1993 only food poisoning, since 1994, food poisoning and other gastrointestinal infections

2) change in registration: up to 1993 other salmonellosis than food poisoning, since 1994, only extraintestinal infections

3) medians

Data sources: Infectious diseases and poisonings in Poland. NIPH-NIH, MoH/CSI. Warsaw. Annual Reports: 1985-2012

definition adopted by the European Commission in its decision of 28 April 2008 amending Decision 2002/253/EC and introduced into routine surveillance in Poland in 2009.

RESULTS

In Poland in 2012, it was reported a total of 8 444 cases of zoonotic salmonellosis (21.9/100 000) (Table I). This is the lowest annual number of cases ever recorded, indicating a continuation of the downward trend of salmonellosis incidence in the country. Compared with 2011, it was about 369 fewer cases reported, and in relation to the median for 2006-2010 decrease of 1 288 cases. The proportion of hospitalizations is still very high and maintained as in the past 10 years, at nearly 70%. The percentage of hospitalizations in the early 90s was a little over 40%. Increase of the fraction of hospitalized cases among the reported is one of the indicators of decreased fraction of laboratory tests requested performed by doctors and the limiting it mainly to the people who because of their symptoms required hospitalization.

As in the previous years, the disease occurred primarily in the summer. The increase in the number of cases was observed since May, with a peak in August, and the marked decrease was in November.

As in previous years, more than 95% of all registered cases of salmonellosis met the criteria for a confirmed case (Table II). The largest proportion of probable cases were reported Świętokrzyskie (18.1%) and Mazowieckie (12%).

In 2012, a significant decrease in the incidence of zoonotic salmonellosis (at least 5% compared to the previous year) was observed in 6 provinces - the largest in the Warmińsko-Mazurskie and Zachodniopomorskie (almost 40%) (Table III). However, in the Podlaskie and Świętokrzyskie there was a significant increase in the incidence, in Podlaskie by more than 60%.

In 2012 there were registered 177 cases of extraintestinal salmonellosis (0.46/100 000), which was 16 cases more than in 2011 and 41 more than the median for 2006-2010.

As in previous years, most of cases occurred in children below five, with the highest incidence of 236 per 100 000 in children under 2 years of age (Table IV).

Table II. Salmonellosis in Poland in 2012. Number of cases and percentage by case definition and province

Province	Cases of salmonellosis				Total	
	probable		confirmed		No. of cases	%
	No. of cases	%	No. of cases	%		
POLSKA	492	5.8	7 952	94.2	8 444	100.0
1. Dolnośląskie	8	2.5	309	97.5	317	100.0
2. Kujawsko-pomorskie	15	2.7	547	97.3	562	100.0
3. Lubelskie	10	1.7	569	98.3	579	100.0
4. Lubuskie	3	2.4	124	97.6	127	100.0
5. Łódzkie	5	1.0	509	99.0	514	100.0
6. Małopolskie	19	2.8	664	97.2	683	100.0
7. Mazowieckie	224	12.0	1 650	88.0	1 874	100.0
8. Opolskie	0	0.0	129	100.0	129	100.0
9. Podkarpackie	53	8.3	586	91.7	639	100.0
10. Podlaskie	13	3.2	390	96.8	403	100.0
11. Pomorskie	0	0.0	535	100.0	535	100.0
12. Śląskie	13	2.4	521	97.6	534	100.0
13. Świętokrzyskie	52	18.1	236	81.9	288	100.0
14. Warmińsko-mazurskie	6	1.7	356	98.3	362	100.0
15. Wielkopolskie	70	10.2	614	89.8	684	100.0
16. Zachodniopomorskie	1	0.5	213	99.5	214	100.0

Data sources: Annual reports on cases of infectious diseases and poisonings in Poland (MZ-56)

Extraintestinal salmonellosis, as in the previous years, was most frequently diagnosed in children under one year, the incidence was 2.86 per 100 000 and it was lower than in 2011 and slightly higher than the median for the period of 2006-2010 (Table IV).

According to data of the Central Statistical Office in Poland in 2012 then were 7 deaths related to salmonellosis.

In 2012, under the surveillance of food-borne diseases it were reported 181 outbreaks caused by *Salmonella*. In those outbreaks the total 1511 people fell

ill. This represents less than 18% of all registered cases of intestinal salmonellosis. Almost 80 % of outbreaks occurred in households, including about 70 % which involved only residents of single household. Outbreaks, in which occurred 30 or more cases was 10. In three it was registered more than 50 patients (Table V). Five outbreaks occurred in kindergartens. In 168 outbreaks (almost 93% of all reported) etiological agent was *S. Enteritidis*, *S. Typhimurim* was in 7, in one each *S. Infantis* and *S. Brandenburg*. In one outbreak occurred simultaneously two serotypes of *Salmonella*: *S. Mbandaka* and

Table III. Salmonellosis in Poland in 2006-2012. Number of cases and incidence per 100 000 population by province

Province	Salmonellosis - total						Extraintestinal salmonellosis					
	2006-2010 (median)		2011		2012		2006-2010 (median)		2011		2012	
	No. of cases	Incidence rate	No. of cases	Incidence rate	No. of cases	Incidence rate	No. of cases	Incidence rate	No. of cases	Incidence rate	No. of cases	Incidence rate
POLSKA	9 732	25.5	8 813	22.9	8 444	21.9	136	0.36	161	0.42	177	0.46
1. Dolnośląskie	431	15.0	310	10.6	317	10.9	5	0.17	2	0.07	0	0.00
2. Kujawsko-pomorskie	668	32.3	549	26.2	562	26.8	9	0.43	15	0.71	11	0.52
3. Lubelskie	696	32.2	583	26.8	579	26.7	2	0.09	6	0.28	3	0.14
4. Lubuskie	201	19.9	135	13.2	127	12.4	6	0.59	2	0.20	6	0.59
5. Łódzkie	727	28.6	531	20.9	514	20.3	6	0.24	6	0.24	7	0.28
6. Małopolskie	822	25.0	756	22.6	683	20.4	9	0.27	10	0.30	17	0.51
7. Mazowieckie	1 689	32.6	1 896	35.9	1 874	35.4	17	0.33	24	0.46	17	0.32
8. Opolskie	212	20.5	136	13.4	129	12.7	3	0.29	4	0.39	8	0.79
9. Podkarpackie	808	38.5	608	28.6	639	30.0	8	0.38	7	0.33	12	0.56
10. Podlaskie	464	39.0	248	20.6	403	33.6	5	0.42	5	0.42	5	0.42
11. Pomorskie	712	31.8	667	29.3	535	23.4	10	0.45	23	1.01	14	0.61
12. Śląskie	853	18.3	633	13.7	534	11.6	20	0.43	27	0.58	28	0.61
13. Świętokrzyskie	344	26.9	215	16.8	288	22.6	4	0.31	5	0.39	5	0.39
14. Warmińsko-mazurskie	536	37.6	581	40.0	362	24.9	3	0.21	6	0.41	7	0.48
15. Wielkopolskie	729	21.4	623	18.1	684	19.8	18	0.53	7	0.20	25	0.72
16. Zachodniopomorskie	409	24.2	342	19.8	214	12.4	7	0.41	12	0.70	12	0.70

Data sources: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw. Annual Reports: 2006-2012

Table IV. Salmonellosis in Poland in 2006-2012. Number of cases, incidence per 100 000 population, and percentage of cases by age

Age group	Salmonellosis - total									Extraintestinal salmonellosis								
	2006-2010 (median)			2011			2012			2006-2010 (median)			2011			2012		
	No. of cases	Incidence rate	%	No. of cases	Incidence rate	%	No. of cases	Incidence rate	%	No. of cases	Incidence rate	%	No. of cases	Incidence rate	%	No. of cases	Incidence rate	%
Total	9 732	25.5	100.0	8 813	22.9	100.0	8 444	21.9	100.0	136	0.36	100.0	161	0.42	100.0	177	0.46	100.0
0	1 009	254.0	8.5	751	188.9	8.5	657	171.0	7.8	9	2.27	7.5	12	3.02	7.5	11	2.86	6.2
1	1 165	307.0	11.4	1 003	236.8	11.4	956	236.0	11.3	6	1.63	4.3	7	1.65	4.3	9	2.22	5.1
2	863	229.7	9.3	824	190.4	9.3	768	181.1	9.1	3	0.84	1.9	3	0.69	1.9	5	1.18	2.8
3	643	179.4	8.4	744	177.8	8.4	757	174.8	9.0	1	0.28	0.6	1	0.24	0.6	4	0.92	2.3
4	521	141.8	6.1	540	137.0	6.1	601	143.7	7.1	1	0.28	1.2	2	0.51	1.2	2	0.48	1.1
0 - 4	4 134	223.1	43.8	3 862	186.9	43.8	3 739	181.1	44.3	19	1.06	15.5	25	1.21	15.5	31	1.50	17.5
5 - 9	1 148	64.4	13.7	1 205	66.5	13.7	1 315	71.3	15.6	3	0.17	3.7	6	0.33	3.7	5	0.27	2.8
10-19	890	18.4	8.1	711	16.4	8.1	657	15.8	7.8	1	0.02	3.1	5	0.12	3.1	7	0.17	4.0
20-29	701	11.1	6.3	551	9.1	6.3	515	8.7	6.1	5	0.08	3.7	6	0.10	3.7	5	0.08	2.8
30-39	588	10.2	5.3	464	7.8	5.3	421	6.9	5.0	8	0.15	5.6	9	0.15	5.6	6	0.10	3.4
40-49	455	9.3	4.3	377	7.8	4.3	298	6.2	3.5	11	0.22	7.5	12	0.25	7.5	9	0.19	5.1
50-59	696	12.0	6.3	552	9.5	6.3	489	8.6	5.8	28	0.50	18.0	29	0.50	18.0	22	0.39	12.4
60 +	1 246	17.2	12.4	1 091	14.2	12.4	1 010	12.8	12.0	64	0.94	42.9	69	0.90	42.9	92	1.16	52.0

Data sources: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw. Annual Reports: 2006-2012

Table V. Salmonellosis in Poland in 2012. Outbreaks of foodborne infections caused by *Salmonella* involving 30 cases and more

Number of cases (of which children age 0-14)	Number of hospitalization	Etiological agent (<i>Salmonella</i> serotype)	Setting of outbreak occurrence	Place of outbreak occurrence		Month
				province	district	
104 (101)	11 (11)	Enteritidis	Kindergarten and school - 5 settings (catering)	mazowieckie	Warszawa	September
96 (5)	18 (4)	Enteritidis	Weeding House	mazowieckie	wołomiński	June
66 (57)	10 (10)	Enteritidis	Kindergarten	podkarpackie	dębicki	June
49 (47)	4 (4)	Enteritidis	Kindergarten - 9 settings (catering)	małopolskie	Kraków	May
37 (6)	3 (3)	Enteritidis	Restaurant	mazowieckie	zwoleński	August
36 (5)	21 (5)	Enteritidis	Weeding House	mazowieckie	makowski	July
34 (29)	4 (4)	Enteritidis	Kindergarten	podlaskie	Białystok	January
34 (5)	0 (0)	Enteritidis	Weeding House	świętokrzyskie	staszowski	July
33 (31)	2 (2)	Enteritidis	Kindergarten	podlaskie	Białystok	May
33 (0)	3 (0)	Enteritidis	Agroturistic farm	dolnośląskie	ząbkowicki	July

S. Typhimurium. Compared to about 70 % of the total number of hospitalized persons infected with zoonotic *Salmonella* in 2012, the proportion of hospitalizations in outbreaks was much lower and amounted to less than 33%. In 2012, nine outbreaks occurred in kindergartens. In those total of 259 people fell ill. For these outbreaks proportion of hospitalization was significantly higher and amounted to over 83%.

Information on outbreaks of food infection caused by *Salmonella* is contained in the article "Food poisoning and infection" in Epidemiological Chronicle of this issue of PE.

In 2012, among the five most common serotypes causing disease, the main etiological factor in all provinces in both outbreaks and sporadic cases, remained *S. Enteritidis* (Table V, VI). This serological type caused 77.3% of all cases of salmonellosis (Table V, VI), closely

to reported in 2011, when it reached 77% of all cases. In 2012, *S. Typhimurium* still occupied the second position among the serotypes, although for several years there has been steady downward trend in the number of cases. In 2012, there were about 33% less. In 2012, there were slightly more cases caused by *S. Infantis* sticks and less caused by *S. Mbandaka*. Number of other serotypes did not exceed 40.

In 2012, once again increased the percentage of isolates without determination of the serological type of *Salmonella*. It amounted to 14%. Particularly worrying is the situation in the Pomorskie province, in which more than 58% of the isolates had serotype not identified, and in the Łódzkie province, more than 34.4%. In those provinces the situation is getting worse every year (Table V).

Table VI. Salmonellosis in Poland in 2011-2012. Number of cases by serotype and province

Serotype of <i>Salmonella</i>	Poland		Province															
	2011	2012	Dolnośląskie	Kujawsko-pomorskie	Lubelskie	Lubuskie	Łódzkie	Małopolskie	Mazowieckie	Opolskie	Podkarpackie	Podlaskie	Pomorskie	Śląskie	Świętokrzyskie	Warmińsko-mazurskie	Wielkopolskie	Zachodniopomorskie
Total	8 814	8 447	317	562	579	127	514	684	1 874	129	641	403	535	534	288	362	684	214
Enteritidis	6 783	6 536	263	403	526	110	267	574	1 540	96	595	338	194	350	237	265	604	174
Typhimurium	484	322	18	35	18	5	46	14	47	7	13	28	9	16	13	16	29	8
Infantis	99	114	3	5	4	2	9	15	10	3	9	4	1	23	1	9	11	5
Mbandaka	89	77	4	1	1	1	1	18	16	1	-	3	1	22	-	2	2	4
Virchow	73	37	1	2	-	-	2	2	-	3	3	5	-	7	-	3	5	4
Agona	15	26	-	-	1	-	3	4	13	2	1	-	1	-	-	-	1	-
Derby	15	20	1	-	1	1	4	1	3	-	1	1	1	3	-	2	1	-
Braenderup	1	17	1	1	-	-	-	10	-	-	2	1	-	-	-	1	-	1
Gallinarum	-	16	-	-	-	-	-	-	-	-	-	-	15	-	-	-	1	-
Stanley	4	15	-	1	1	-	-	2	-	-	-	2	-	3	1	2	2	1
Schleissheim	8	12	-	-	-	-	-	8	-	-	-	1	-	2	1	-	-	-
Saintpaul	12	11	-	-	-	-	1	3	-	-	-	1	-	2	-	1	2	1
Indiana	7	9	-	-	-	-	-	4	-	-	4	-	-	-	-	-	-	1
Hadar	15	7	-	-	1	-	-	-	3	-	1	-	-	1	-	1	-	-
Kentucky	9	5	-	1	-	-	-	-	-	-	1	-	-	1	-	-	-	2
London	4	5	-	1	-	-	-	-	-	-	-	1	-	-	3	-	-	-
Other	81	72	3	5	2	4	4	5	6	3	5	5	2	6	6	4	8	4
Not determined	1 115	1 146	23	107	24	4	177	24	236	14	6	13	311	98	26	56	18	9

Data sources: Annual reports on salmonellosis cases by an etiological agent and age sent to the Department of Epidemiology, NIPH-NIH by the provincial sanitary-epidemiological station

Table VII. Salmonellosis in Poland in 2012. Number of cases by serotype and age

Serotype of <i>Salmonella</i>	Total		Age group												
	No of cases	%	0	1	2	3	4	0-4	5-9	10-19	20-29	30-39	40-49	50-59	60+
Total	8 447	100.0	658	956	768	757	601	3 740	1 315	657	515	421	299	490	1 010
Enteritidis	6 536	77.4	425	697	610	608	504	2844	1112	530	403	347	237	378	685
Typhimurium	322	3.8	43	46	22	18	9	138	35	16	21	13	10	29	60
Infantis	114	1.3	25	10	7	4	-	46	6	6	11	2	10	4	29
Mbandaka	77	0.9	13	13	8	5	2	41	5	7	3	2	5	4	10
Virchow	37	0.4	6	8	-	1	-	15	-	1	3	1	4	5	8
Agona	26	0.3	1	1	-	-	1	3	3	3	12	1	1	-	3
Derby	20	0.2	1	3	1	-	1	6	-	2	4	1	-	1	6
Braenderup	17	0.2	2	4	-	-	-	6	-	-	2	1	-	1	7
Gallinarum	16	0.2	3	2	1	1	1	8	2	2	-	-	-	2	2
Stanley	15	0.2	4	2	-	1	-	7	1	1	1	1	-	1	3
Schleissheim	12	0.1	7	-	-	-	1	8	-	-	1	1	-	1	1
Saintpaul	11	0.1	2	2	1	-	1	6	1	1	-	-	1	-	2
Indiana	9	0.1	3	4	-	-	-	7	-	2	-	-	-	-	-
Hadar	7	0.1	1	1	-	-	-	2	-	1	1	-	1	1	1
Kentucky	5	0.1	1	-	-	-	-	1	1	-	-	-	-	1	2
London	5	0.1	-	-	-	-	-	-	-	-	-	-	-	1	4
Other	72	0.9	18	9	4	1	2	34	4	2	7	2	2	5	16
Not determined	1 146	13.6	103	154	114	118	79	568	145	83	46	49	28	56	171

Data sources: Annual reports on salmonellosis cases by an etiological agent and age sent to the Department of Epidemiology, NIPH-NIH by the provincial sanitary-epidemiological station

Table VIII. Salmonellosis in Poland in 2012. Results of bacteriological examinations of different groups of persons: cases, convalescents, carriers, contacts, food staff and others

Tested groups	Number of tested people	Number of people positive for Sallmonella					
		Total	(%)	S. Typhi	S. Paratyphi	other <i>Salm.</i>	<i>Shigella</i>
Cases	23 274	1 509	6.5	-	1	1 508	-
Convalescents	6 445	2 584	40.1	-	6	2 578	4
Carriers	4 566	2 338	51.2	2	3	2 333	2
Contacts	11 378	1 030	9.1	-	-	1 030	-
Food handlers and other professionals	418 140	1 008	0.2	-	2	1 006	4
Other	7 283	77	1.1	-	-	77	-

Data sources: Annual reports on results of laboratory tests for Salmonella and Shigella sent to the Department of Bacteriology, NIPH-NIH by the provincial sanitary-epidemiological station

In 2012 the number of people working with food processing, who were tested for *Salmonella* was similar as in 2011, and the percentage of people with a positive test result was 0.2% and it was lower than in 2011 and 2010, when it amounted respectively to 0.3% and 0.5%. (Table IX).

SUMMARY AND CONCLUSIONS

1. In Poland in 2012, it was reported a total of 8 444 cases of zoonotic salmonellosis (21.9/100 000). It indicates continuation of the downward trend in the number of incident cases of salmonellosis in the country.
2. Throughout the country the most common etiological agent in both outbreaks and sporadic cases is *S. Enteritidis*, and the share of infections caused by this serological type in the total number of cases amounted to over 77%.
3. Although the number of tests for the carrier state of persons working with food processing remained at a

similar level as in 2011 and 2010, the percentage of positive diagnoses was smaller (0.2%) as compared to 2010 - 0.5 % and 2011 - 0.3%.

4. High proportion of hospitalized cases since 2003 (approximately 70% of all recorded cases), and increasing percentage of isolates in which no serotyping was performed indicates worsening of laboratory diagnostics of diarrheal diseases. It must therefore be assumed that salmonellosis in Poland are largely underdiagnosed and underreported which requires energetic action by the authorities supervising epidemiological surveillance .

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