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INFECTIOUS DISEASES IN POLAND IN 2013*

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ABSTRACT

This article aims at evaluating the epidemiological situation of infectious and parasitic diseases in Poland in 2013.

MATERIAL AND METHODS. This article was mainly based on the statistical data derived from annual bulletins "Infectious diseases and poisonings in Poland in 2013" and "Vaccinations in Poland in 2013" (NIPH-NIH, CSI, Warsaw 2014) and data specified in particular articles of the epidemiological chronicle of the current issue of the Epidemiological Review. Data on fatal cases due to infectious and parasitic diseases registered in Poland in 2013 and previous years were obtained from the Demographic Surveys and Labour Market Department of the Central Statistical Office.

RESULTS. As with the previous years, upper respiratory tract infections classified as "influenza and influenza-like illness" were the most prevalent with a total number cases amounting to 3 164 405 (8 218.7/100 000). Compared to 1 460 037 (3 789.0/100 000) cases registered in 2012 and the median of 2007-2011, it was an increase of incidence by 116.9% and 469.5%, respectively.

In 2013, a decreasing tendency of incidence of bacterial intestinal infections was sustained. Out of bacterial infections, those caused by coccobacilli of *Salmonella* spp. were still predominant. In 2013, a total of 7 578 (19.7/100 000) such cases were reported. Compared to 2012 and the median of 2007-2011, it was a decrease of incidence by 10.0% and 21.9%, respectively.

A total of 42 699 (110.9/100 000) viral intestinal infections were reported. In this group, the most common were infections caused by rotaviruses – 23 529 (61.1/100 000). Having referred to 2012, incidence decreased by ca 0.6%, while in comparison with the median of 2007-2011, it was an increase by 5.5%.

Compared to 2012, an incidence of diarrhoea of unspecified origin in children under 2 years old increased by 28.4%.

In 2013, a total of 2 183 pertussis cases (5.7/100 000) were registered, which compared to the previous year indicated a decrease of incidence by 53%.

In 2013, a decrease of mumps incidence by 12.3% was noted. Compared to the previous year, there was more than 5-fold increase of rubella incidence. In 2012, the number of rubella cases was 6 263 (16.3/100 000), while in 2013 - 38 548 (100.1/100 000). Considerable increase in the number of rubella cases resulted from compensatory epidemic which affected mainly boys who were not inoculated with MMR vaccine. In 2013, there were 2 cases of congenital rubella. A total of 84 cases (0.22/100 000) of measles were reported.

In 2013, the number of invasive disease cases caused by *H. influenzae* was 25 (0.06/100 000). Compared to 2012 and the median of 2007-2011, incidence decreased by 30.5% and 19.3%, respectively.

The number of infections of *Streptococcus pneumoniae* etiology in 2013 amounted to 540. Compared to 2012 and the median of 2007-2011, there was an increase by 22.5% and 95.3%, respectively. Having considered the data of 2012, the number of sepsis cases caused by this pathogen increased by 32.9%.

Compared to 2012, tuberculosis incidence in 2013 in total (all tuberculosis manifestations) decreased from 19.6/100 000 to 18.8, while respiratory tuberculosis from 18.2 to 17.8/100 000.

In 2013, a total of 1 097 HIV infections (2.85/100 000) were reported. Compared to the previous year, incidence did not change.

In total, 36 malaria cases were notified who were infected abroad while visiting malaria endemic areas.

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In 2013, no cases of diphtheria, poliomyelitis, rabies and viral haemorrhagic fevers, except for dengue fever, were reported. Having considered dengue fever, a total of 13 infections acquired while visiting endemic areas were notified to the epidemiological surveillance.

A total of 2 328 fatal cases due to infectious and parasitic diseases were registered in Poland in 2013. Percentage of deaths due to aforesaid causes accounted for 0.60% of the total number of all deaths. Mortality rate was 6.0 per 100 000 population. The highest proportion of deaths (23.2%) was caused by tuberculosis and its sequelae.

Key words: *infectious diseases, epidemiology, public health, Poland, 2013*

OBJECTIVE OF THE ARTICLE

The objective of this article is to evaluate the epidemiological situation of infectious and parasitic diseases under epidemiological surveillance in Poland in 2013 compared to 2012 and 2007-2011.

MATERIAL AND METHODS

This article was based on the statistical data derived from annual bulletins "Infectious diseases and poisonings in Poland in 2013" and "Vaccinations in Poland in 2013" (NIPH-NIH, CSI, Warsaw 2014) and data specified in particular articles of the epidemiological chronicle, in which authors thoroughly discussed selected infectious diseases. Data on fatal cases due to infectious and parasitic diseases registered in Poland in 2013 and selected previous years were obtained from the Demographic Surveys and Labour Market Department of the Central Statistical Office.

It should be highlighted that data on infectious diseases in the second half of 2013 were collected in Poland in a modified manner as the legal provisions concerning the surveillance over infectious disease changed. On the day of 10th August 2013, "Regulation of the Minister of Health on the notification of suspicion or diagnosis of infection, infectious disease or death due to infection or infectious disease" (Journal of Laws of 2013, item 848) entered into force. This document specifies (i.a.) a list of diseases (infections, deaths) which have to be notified by physicians to the state sanitary inspection. Legal obligation to notify cases of selected infectious diseases (diseases subject to obligatory notifications were determined by the Minister) was established anew. Formally, such obligation has not existed since 1st January 2009, in which "Act of 5th December 2008 on the Prevention and Control of Infections and Infectious Diseases in Humans" (Journal of Laws of 2008, item 1570) entered into force. In 2013, no increase in the number of notified cases was noted as a result of this modification. However, it strengthened the role of surveillance and provided sanitary inspection with tools allowing for more effective control of infection notifications which should improve the situation in the future.

RESULTS AND DISCUSSION

Table I. specifies the statistics for selected diseases subject to epidemiological surveillance.

Infections of the upper respiratory tract. In 2013, a total of 3 164 405 (8 218.7/100 000) cases of upper respiratory tract infections, classified as "influenza and influenza-like illness", were reported. Compared to 2012 and the median of 2007-2011, it was an increase by 116.9% and 469.5%, respectively. As with the previous years, the highest incidence for influenza and influenza-like illness was reported in children aged 0-14 years old, amounting to 24 229.3/100 000, i.e. nearly 3-fold more compared to the general population. In 2013, a high number of fatal cases due to such diseases was noted (115). Compared to 2012, the number of deaths due to influenza and influenza-like illness amounted to 4, while the median of 2007-2011 was 28 fatal cases. In 2013, there was an increase in the number of laboratory-confirmed influenza cases - 2 438 in 2013 and only 133 in 2012.

Foodborne poisonings and infections. In 2013, as with the previous decades, infectious caused by coccobacilli *Salmonella* spp. predominated in bacterial intestinal infections with a sustained decreasing tendency regarding both incidence and percentage share of salmonellosis in the group of infection of other etiologies, especially viral infections. A total of 7 578 infections caused by these coccobacilli (19.7/100 000) were registered. The highest incidence of intestinal infections of *Salmonella* etiology was noted in warmińsko-mazurskie (35.1/100 000) province, while the lowest in dolnośląskie (10.3/100 000) and śląskie (11.0/100 000) provinces.

Out of viral intestinal infections, the highest number was caused by rotaviruses, which mainly affect children. In 2013, a total of 23 529 (61.1/100 000) infections were reported. Compared to the previous year, it was not statistically significantly different, however, with regard to the median of 2007-2011, its value was higher by 5.5%. In total, 42 699 cases (110.9/100 000) of viral intestinal infections were reported. Having referred to the previous year and the median of 2007-2011, it was an increase of incidence by 8.3% and 29.4%, respectively.

Table I. Infectious diseases in Poland 2007-2013. Number of cases, incidence per 100 000 population and number of deaths by disease and year

Disease		Categories of International Classification of Diseases (ICD-10)	Median in years 2007-2011			2012			2013		
			number of cases	incidence*	number of deaths**	number of cases	incidence*	number of deaths**	number of cases	incidence*	number of deaths**
1		2	3	4	5	6	7	8	9	10	11
Cholera [EU]		A00	0	0	0	0	0	0	0	0	0
Typhoid fever [EU]		A01.0	3	0.008	0	2	0.005	0	2	0.005	0
Paratyphoid fevers A, B, C [EU]		A01.1-A01.3	2	0.005	0	5	0.013	0	5	0.013	0
Salmonella infections	total	A02	9 608	25.2	4	8 444	21.9	7	7 578	19.7	10
	salmonella enteritis [EU]	A02.0	9 478	24.9	1	8 267	21.5	1	7 407	19.2	1
	parenteral infections	A02.1-A02.9	130	0.36	2	177	0.46	6	171	0.44	9
Shigellosis [EU]		A03	30	0.08	0	13	0.03	0	19	0.05	0
Other bacterial intestinal infections	total	A04	6 595	17.3	34	7 046	18.3	167	9 624	25.0	287
	enteropathogenic, enterotoxigenic, enteroinvasive *E. coli*	A04.0-A04.2	952	2.50	0	532	1.38	0	399	1.04	1
	enterohaemorrhagic *E. coli* [EU]	A04.3	4	0.010	0	5	0.013	0	8	0.021	0
	other intestinal *E. coli*	A04.4	908	2.38	0	845	2.19	0	620	1.61	1
	campylobacteriosis [EU]	A04.5	354	0.92	0	431	1.12	0	552	1.43	0
	yersiniosis [EU]	A04.6	214	0.56	0	201	0.52	0	199	0.52	0
	Clostridium difficile	A04.7	.	.	22	.	.	127	4 738	12.31	210
	other specified and unspecified [1)]	A04.8-A04.9	4 225	11.1	12	5 032	13.1	40	3 108	8.1	75
Other bacterial intestinal infections in children under 2 years		A04	2 846	345.0	0	2 119	5.5	0	2 007	5.2	0
Other bacterial foodborne intoxications	total	A05	2 195	5.7	2	1 787	4.6	12	1 646	4.3	5
	staphylococcal	A05.0	217	0.57	0	147	0.38	0	128	0.33	0
	botulism [EU]	A05.1	35	0.09	0	22	0.06	2	24	0.06	0
	Clostridium perfringens	A05.2	4	0.010	1	5	0.013	0	18	0.047	2
	other specified	A05.3-A05.8	125	0.33	0	52	0.13	2	49	0.13	0
	unspecified	A05.9	1 800	4.7	0	1 561	4.1	8	1 427	3.7	3
Other bacterial foodborne intoxications in children under 2 years		A05	109	13.2	1	72	9.1	0	64	8.4	2
Giardiasis /lambliasis/ [EU]		A07.1	2 350	6.2	0	1 655	4.3	0	1 881	4.9	0
Cryptosporidiosis [EU]		A07.2	1	0	0	2	0.005	0	2	0.005	0
Viral and other specific intestinal infections	total	A08	32 723	85.7	3	39 462	102.4	5	42 699	110.9	16
	rotaviruses	A08.0	22 104	57.9	1	23 692	61.5	1	23 529	61.1	2
	noroviruses	A08.1	1 186	3.1	0	1 475	3.8	0	2 602	6.8	0
	other specified and unspecified	A08.2-A08.5	9 691	25.4	2	14 295	37.1	4	16 568	43.0	14
Viral and other specific intestinal infections in children under 2 years		A08	15 853	1964.5	0	18 066	2288.4	0	18 530	2437.4	0
Diarrhoea in children under 2 years, NOS, presumed of infectious origin		A09	11 581	1428.4	1	14 201	1798.9	0	17 564	2310.4	0

1		2	3	4	5	6	7	8	9	10	11
Tuberculosis [EU, 2)]	total	A15-A19	8 236	21.6	743	7 542	19.6	630	7 250	18.8	532
	respiratory	A15-A16; A19	7 654	20.1	727	7 018	18.2	620	6 835	17.8	526
Plague [EU]		A20	0	0	0	0	0	0	0	0	0
Tularaemia [EU]		A21	4	0.010	0	6	0.016	0	8	0.021	0
Anthrax [EU]		A22	0	0	0	0	0	0	0	0	0
Brucellosis (new cases) [EU]		A23	2	0.005	0	0	0	0	1	0	0
Leptospirosis [EU]		A27	5	0.013	1	2	0.005	0	0	0	0
Listeriosis [EU]		A32; P37.2	43	0.11	3	54	0.14	8	58	0.15	6
Tetanus [EU]		A33-A35	16	0.04	5	19	0.05	4	14	0.04	4
Diphtheria [EU]		A36	0	0	0	0	0	0	0	0	0
Whooping cough [EU]		A37	1 987	5.2	0	4 684	12.2	0	2 183	5.7	0
Scarlet fever		A38	13 940	36.5	0	25 421	66.0	0	25 115	65.2	0
Meningococcal disease [EU]	total	A39	296	0.78	18	241	0.63	11	251	0.65	15
	meningitis and / or encephalitis	A39.0; A39.8/G05.0	193	0.50	2	165	0.43	1	163	0.42	4
	sepsis	A39.1-A39.4	192	0.50	15	146	0.38	9	167	0.43	10
Erysipelas		A46; O86.8	3 425	8.9	11	4 241	11.0	9	5 242	13.6	20
Legionellosis [EU]		A48.1-A48.2	18	0.05	0	10	0.03	0	11	0.03	1
Syphilis (total) [EU, 3)]		A50-A53	932	2.44	2	993	2.58	4	1 343	3.49	1
Gonorrhoea [EU, 3)]		A54	301	0.79	0	733	1.90	0	549	1.43	0
Other sexual transmitted diseases caused by *Chlamydia* [EU, 3)]		A56	627	1.64	0	314	0.81	0	406	1.05	0
Lyme disease		A69.2	9 003	23.6	3	8 781	22.8	4	12 760	33.1	4
Ornithosis		A70	0	0.000	0	0	0	0	2	0	0
Q fever [EU]		A78	0	0.000	0	0	0	0	0	0	0
Typhus fever, spotted fever and other rickettsioses		A75; A77; A79	1	0	0	3	0.008	0	5	0.013	0
Acute poliomyelitis [EU]	acute paralytic poliomyelitis, wild virus	A80.1; A80.2; A80.4;	0	0	0	0	0	0	0	0	0
	acute paralytic poliomyelitis, vaccine-associated (VAPP, cVDPV)	A80.0; A80.3-9	0	0	0	0	0	0	1	0.003	0
Spongiform encephalopathy	Creutzfeldt-Jakob disease (CJD)	A81.0	18	0.05	20	17	0.04	23	23	0.06	15
	variant Creutzfeldt-Jakob disease (vCJD) [EU]	A81.0	0	0	0	0	0	0	0	0	0
Rabies [EU]		A82	0	0	0	0	0	0	0	0	0
Viral encephalitis	total	A83-A86; G05.1	452	1.18	19	348	0.90	7	380	0.99	10
	tick-borne viral encephalitis	A84	233	0.61	2	190	0.49	1	227	0.59	2
	other specified	A83; A85; B00.4; B02.0	38	0.10	3	47	0.12	4	43	0.11	3
	unspecified	A86	141	0.37	13	111	0.29	2	110	0.29	5
Viral meningitis	total	A87; G02.0	1 039	2.70	4	1 268	3.29	3	1 058	2.75	2
	enteroviral	A87.0	23	0.06	0	102	0.26	0	53	0.14	0
	other specified and unspecified	A87.1-A87.9; B00.3; B02.1	1 016	2.64	3	1 166	3.03	3	1 005	2.61	2
Dengue fever [EU]		A90-A91	4	0.010	0	5	0.013	0	13	0.034	0

1			2	3	4	5	6	7	8	9	10	11
Yellow fever [EU]			A95	0	0	0	0	0	0	0	0	0
Lassa fever [EU]			A96.2	0	0	0	0	0	0	0	0	0
Crimean-Congo haemorrhagic fever [EU]			A98.0	0	0	0	0	0	0	0	0	0
Disease caused by Marburg or Ebola virus [EU]			A98.3; A98.4	0	0	0	0	0	0	0	0	0
Varicella			B01	160 174	420.2	0	208 276	540.5	1	178 501	463.6	1
Measles [EU]			B05	40	0.10	0	70	0.18	0	84	0.22	0
Rubella [EU]	total		B06; P35.0	7 587	19.9	0	6 263	16.3	0	38 548	100.1	0
	congenital rubella		P35.0	1	0.24	0	0	0	0	2	0.541	0
Viral hepatitis	total		B15-B19	3 995	10.4	229	4 002	10.4	288	4 287	11.1	233
	type A [EU]		B15	155	0.41	0	71	0.18	1	48	0.12	0
	type B [EU, 4)]		B16; B18.0-B18.1	1 475	3.9	54	1 583	4.1	52	1 541	4.0	45
	type C /case definition from 2005/ [EU, 4)]		B17.1; B18.2	2 338	6.1	155	2 361	6.1	217	2 706	7.0	175
	other specified and unspecified		B17.0; B17.2-B17.8; B18.8-B18.9; B19	50	0.13	23	20	0.05	18	27	0.07	13
AIDS [EU, 5)]			B20-B24	173	0.45	130	155	0.40	118	151	0.39	123
Newly diagnosed HIV infections [EU, 5)]			Z21	956	2.50	x	1 097	2.85	x	1 097	2.85	x
Mumps [EU]			B26	2 954	7.7	0	2 779	7.2	0	2 436	6.3	0
Malaria [EU]			B50-B54; P37.3-P37.4	22	0.06	0	21	0.05	0	36	0.09	0
Echinococcosis [EU]			B67	28	0.07	2	28	0.07	1	39	0.10	1
Trichinellosis [EU]			B75	36	0.09	0	1	0.003	0	9	0.023	0
Pneumococcal invasive disease [EU]	total		B95.3/ inne	274	0.72	.	441	1.14	.	540	1.40	.
	meningitis and / or encephalitis		B95.3/ G04.2; G00.1	163	0.43	9	146	0.38	8	195	0.51	14
	sepsis		A40.3	130	0.34	6	259	0.67	6	344	0.89	4
	other specified and unspecified		B95.3/ inne; J13	76	0.20	9	131	0.34	22	121	0.31	34
Haemophilus influenzae, invasive disease [EU]	total		B96.3/ inne; A41.3	31	0.08	.	36	0.09	.	25	0.06	.
	meningitis and / or encephalitis		B96.3/ G04.2; G00.0	13	0.03	4	11	0.03	0	9	0.02	0
	sepsis		A41.3	14	0.04	1	15	0.039	0	10	0.026	1
Bacterial meningitis and / or encephalitis		other specified	G00.2-G00.8; G04.2	148	0.39	10	128	0.33	24	144	0.37	32
		unspecified	G00.9; G04.2	372	0.98	74	310	0.80	60	353	0.92	65
Meningitis other and unspecified			G03	446	1.17	41	597	1.55	31	673	1.75	37
Encephalitis other and unspecified			G04.8-G04.9	92	0.24	59	117	0.30	48	141	0.37	85
Influenza and influenza-like illness [EU]			J10; J11	551 054	1 443.0	28	1 460 037	3 789.0	4	3 164 405	8 218.7	115
Congenital toxoplasmosis [EU]			P37.1	7	1.69	2	10	2.59	0	18	4.87	1
Persons bitten by animals suspected of having rabies or contamination of saliva of these animals after which it was taken vaccination against rabies				7 102	18.6	.	7 999	20.8	.	7 844	20.4	.

* incidence, respectively per 100 000 population total, children under 2 years and live births (congenital disease); ** number of deaths according to data from the Demographic Surveys and Labour Market Department-CSO; EU - disease under European Union surveillance; 1) to 2012 the number of cases and incidence including infections caused by *Clostridium difficile*; 2) data from Institute of Tuberculosis and Lung Diseases; 3) data from Centre for Health Information Systems (CSIOZ); 4) number of cases and incidence total (including mixed infections with HBV + HCV); 5) data from Department of Epidemiology, NIPH-NIH by date of diagnosis of infection / disease

Intestinal infections pose a threat especially to children aged under 2 years old. In this group, intestinal infections may often result in severe dehydration and electrolyte imbalance. In 2013, 18 530 cases of viral and other intestinal infections in children under 2 years old were reported (2 437.4/100 000). Compared to 2012 and the median of 2007-2011, it was an increase by 6.5 and 24.1%, respectively. A total of 17 564 (2 310.4/100 000) infections not other specified and presumed of infectious potential were registered in children under 2 years old. Compared to 2012 and the median of 2007-2011, it was an increase by 28.4% and 61.7%.

Noroviral infections, which affect more frequently adults, also constitute an escalating problem. In 2013, the number of such infections was higher by 76.6% than in 2012 while with regard to the median of 2007-2011, there was an increase by 117.2%. Low percentage of laboratory confirmed diagnoses, in which diarrhoea is a basic symptom, results in a low sensitivity of viral infection diagnoses. Thus, there is a high probability that the number of such infections is considerably higher compared to the number of cases notified to epidemiological surveillance. Such problem is also recognized in case of several bacterial infections with an example being campylobacteriosis. In Poland, it is detected significantly less frequently than salmonellosis, while in the countries of Western Europe, it is identified nearly equally often. Yersiniosis is also very rarely diagnosed as a cause of intestinal infections.

In 2013, a total of 19 bacterial dysentery cases were registered.

Diseases subject to the National Immunization Programme (NIP). Surveillance over such diseases is of special importance as data on their incidence have a direct impact on vaccination policy.

Following an increase of pertussis incidence, which was observed in 2012, its value in 2013 decreased by 53.4%, amounting to 5.7/100 000 with a number of 2 183 reported cases.

In 2013, a total of 2 436 (6.3/100 000) mumps cases were notified. Compared to 2012 and the median of 2007-2011, mumps incidence decreased by 12.3% and 18.3%, respectively.

In 2013, there was a compensatory epidemic of rubella. Its beginning was observed in 2012, when rubella incidence increased by 46.0% compared to the previous year. In 2013, 38 548 children were infected with rubella virus, which resulted in an increase of incidence by 516.0% compared to 2012. The most affected were mainly boys from birth cohorts which were not subject to obligatory vaccination. In 2013, there were two cases of congenital rubella. Most probably, concerns arising from compensatory rubella epidemics, and potentially mumps epidemics, would be of lower intensity in the successive years as a result of introducing obligatory immunization with MMR vaccine in 2003 and vaccinating of the next birth cohorts of boys.

Irrespective of the active propaganda of anti-vaccination movements and increase in the number of parents who deliberately refuse to vaccinate their children with MMR, the vaccination coverage rate of the next birth cohorts remains sufficiently high to protect the population against measles. In the majority of cases, infections with measles virus are introduced from countries with lower vaccination coverage rate in population and they concern non-vaccinated children and persons from elder birth cohorts. In 2013, a total of 84 measles cases were registered while in 2012 – 70 cases.

In 2013, the total number of invasive diseases of *H. influenzae* etiology was 25, i.e. 11 cases less compared to the previous year. Following the implementation of vaccination against this bacterium to the obligatory vaccination schedule, incidence of invasive diseases caused by *Haemophilus influenzae* decreased considerably.

Since many years, there is a sustained decreasing tendency of tuberculosis incidence. In 2013, incidence of all manifestations of tuberculosis was 18.8/100 000, while with regard to respiratory tuberculosis – 17.8. Compared to 2012 and the median of 2007-2011, it was a decrease by 3.8% and 12.8%, respectively. Since a number of years, the highest incidence of tuberculosis of all manifestations is reported in lubelskie province. However, aforesaid mentioned decreasing tendency is also observed there. In 2013, a total of 591 cases were registered in this province and incidence was 27.4/100 000. The lowest incidence was noted in wielkopolskie province (9.9/100 000).

Other infectious and parasitic diseases. Invasive infections caused by *Streptococcus pneumoniae* constitute an important problem. In total, 540 infections (1.4/100 000) of *S. pneumoniae* etiology were reported in 2013. Compared to the previous year and the median of 2007-2011, it was an increase by 22.5% and 95.3%, respectively. A considerable increase of infections was reported with regard to meningitis and sepsis caused by this pathogen.

As with the previous year, a high number of scarlet fever was sustained. In total, 25 115 (65.2/100 000) cases were reported, which compared to the median of 2007-2011 was an increase by 78.7%.

In 2013, 251 (0.65/100 000) invasive meningococcal disease cases were reported. Compared to the previous year, it was an increase by 4.2%, while with regard to the median of 2007-2011, it decreased by 16.0%.

In 2013, the number of newly diagnosed HIV infections was 1 097, i.e. the same as in 2012. Compared to the median of 2007-2011, this value was higher by 13.8%. Sustainment of a high number of newly diagnosed HIV infections is an alarming signal which should incline to intensify the preventive measures.

Irrespective of the shortage of data on risk factors of newly diagnosed infections, there are indications suggesting that one of the most important reason of increasing incidence observed is unprotected sexual contacts, especially between males.

Viral hepatitis is one of the most important public health problems in Poland. Out of them, the number of persons infected with hepatitis C virus is especially high. There is no effective vaccine against HCV. In 2013, a total of 2 706 (7.0/100 000) infections were reported. Compared to the previous year and the median of 2007-2011, it was an increase by 14.7% and 15.8%, respectively. It is a signal for strengthening the preventive actions, especially with regard to more precise control of the use of disposable equipments and sterilization of tools in all institutions in which procedures accompanied by skin breakdown are performed, especially in health care units, but also in beauty salons and tattoo studios.

Epidemiological situation of hepatitis B is considerably different as there is a possibility of active immunization. In 2013, the number of hepatitis B cases was 1 541 (4.0/100 000). Compared to the previous year, incidence did not significantly change.

Since many years, Poland is the country with a very low hepatitis A endemicity. There are several dozen of cases reported annually. It rarely exceeds 100 cases (48 in 2013). Most frequently, HAV infections are associated with cases introduced to our country.

In 2013, the number of Lyme borreliosis was 12 760 (33.1/100 000). It was the highest value reported since the implementation of epidemiological surveillance over this disease. Compared to the previous year and the median of 2007-2011, incidence increased by 45.4% and 40.6%, respectively. It places Lyme borrelios in the position of the most important public health problem in the range of infectious diseases.

In 2013, a total of 39 echinococcosis cases were reported, while in 2012 it was 28. These are not high numbers, thus, annual fluctuations in the number of diagnoses result in considerable differences in incidence rates.

Since 2007, no large outbreaks of trichinosis were reported. It is indicative of the improvement in veterinary supervision over hunted animal meat, especially boars. In 2013, 9 cases were notified to the epidemiological surveillance.

Since several dozen of years, there are no malaria cases reported in Poland. In 2013, a total of 36 persons were registered, but acquired abroad.

In 2013, 380 (0.99/100 000) viral encephalitis cases were reported, including 227 (0.59/100 000) caused by tick-borne encephalitis virus. Compared to the previous year, the incidence of tick-borne encephalitis increased by 19.6%, however, with regard to the median of 2007-2011, its valued decreased by 3.6%.

Since 1984, no poliomyelitis cases caused by wild strains of poliovirus were reported in Poland. In 2013, one paralysis triggered by mutated vaccine strain was registered.

In 2013, no cases of the following serious infectious diseases were reported: plague, anthrax, diphtheria, poliomyelitis, rabies and viral haemorrhagic fevers, except for dengue fever, which was acquired by 13 persons in endemic areas.

Mortality due to infectious diseases. According to the Central Statistical Office, a total of 2 328 persons died due to infectious and parasitic diseases in Poland (including deaths due to several manifestations of meningoencephalitis and influenza - codes G00-G05 and J10-J11 of the International Statistical Classification of Diseases and Related Health Problems, ICD-10). Compared to the total number of deaths - 387 312, it accounted for 0.60% and mortality rate was 6.0 per

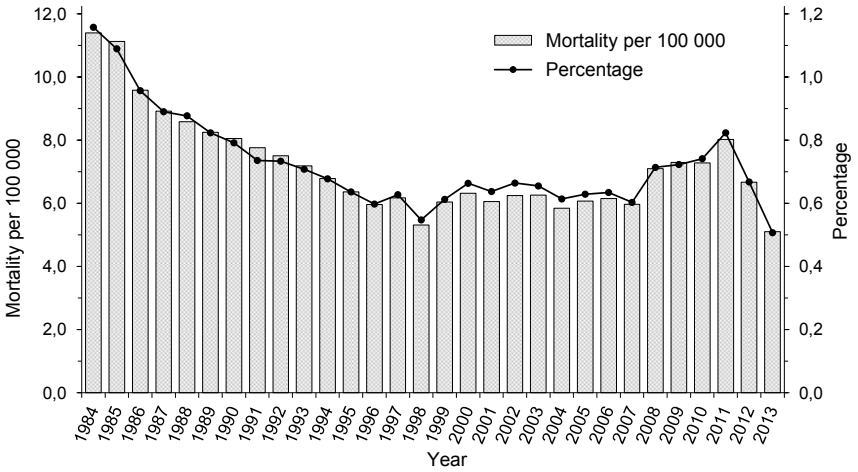

Fig. 1. Infectious diseases mortality per 100 000 population and deaths from infectious diseases as percentage of all deaths by year - Poland 1984-2013

100 000 population. Compared to 2012, there was a decrease of both indicators by ca 16%. (Fig. 1).

Unfortunately, a significant decrease of mortality rate due to infectious and parasitic diseases, which is observed for the second year, is exclusively an ostensible decrease. It is associated with a strengthened verification of death certificates, in which – contrary to the recommendations of the World Health Organization – sepsis was indicated as an underlying cause of death (codes A40 and A41 according to the ICD-10) instead of conditions preceding the occurrence of sepsis and leading to it. Within two recent years, the Department of Epidemiology (NIPH-NIH) highlighted the necessity for more rigorous verification of death certificates with such causes each time while analyzing the initial data on the causes of deaths provided periodically by the Demographic Surveys and Labour Market Department of the Central Statistical Office.

Consequently, the number of deaths, with an underlying cause indicated as streptococcal sepsis or other, most frequently unspecified sepsis, began to sharply decreased – from 1 773 cases in 2011 to 1 141 in 2012 (decrease by 35.6%) and 516 cases in 2013 (decrease by 54.7% and 70.9 compared to 2012 and 2011, respectively) (Fig. 2). There was also a decrease in the share of sepsis in the total number of deaths due to infectious and parasitic diseases, registered by the CSO. In 2011, it exceeded a half of such cases (52.0%), while in 2013 it decreased to 22.2%. Questions are raised with regard to considerable differences in the value of this percentage between provinces, which in 2013 ranged from 0.0% in lubuskie province to 57.0% in zachodniopomorskie province.

In addition to sepsis, the highest number of deaths due to infections and parasitic diseases in Poland in 2013 was attributable to: tuberculosis and its late sequelae (540 deaths; 23.2% of all deaths), viral hepatitis (all types - 250 deaths; 10.7%), intestinal infections caused by *Clostridium difficile* (210 deaths; 9.0%), bacterial meningoencephalitis (128; 5.5%), AIDS (123; 5.3%) and influenza (115; 4.9%). Aforesaid diseases (including sepsis) accounted for 80.8% of all deaths due to infectious diseases in 2013.

Since 2008, there is a systematic increase in the number of deaths due to intestinal infections caused by *Clostridium difficile* in Poland which attracts the attention (Fig. 2). In fact, such increase may be even higher as simultaneously an increase in the number of deaths due to bacterial intestinal infections of unspecified origin (A04.9) was reported, which were noted sporadically in the previous years. In 2013, 68 such cases were registered – 2.9% of all deaths due to infectious diseases (33 in 2012; 1.2%). A considerable part of unspecified infections (if not all) constitutes a group of undiagnosed *C. difficile* infections. It should

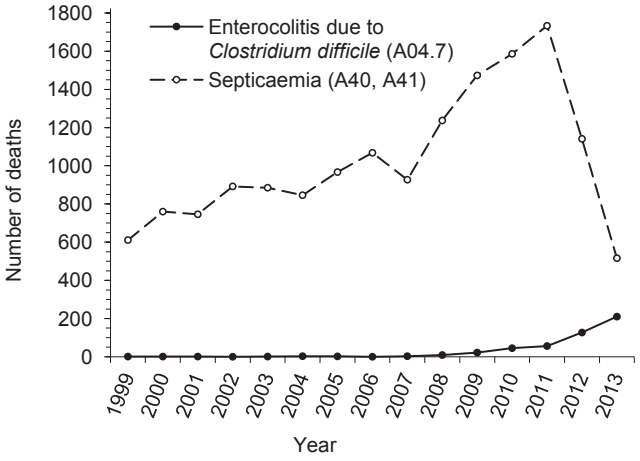

Fig. 2. Number of deaths from sepsis and intestinal infection caused by *Clostridium difficile* - Poland 1999-2013

be also noted that according to the data of the Central Statistical Office, a further increase in the number of hospital outbreaks caused by *C. difficile* was reported in 2013. Its share in the total number of notified hospital outbreaks increased to 28.4%.

In 2013, females (mortality 0.66 per 100 000) died more frequently due to *C. difficile* infection than males (0.42) as well as urban (0.66) compared to rural population (0.37). Such cause of death was mainly reported in the elder population – fatal cases aged over 64 years old accounted for 92.9% of all noted cases.

In 2013, the share of deaths due to parasitic and infectious diseases in the total number of deaths in particular provinces ranged from 0.17% in podkarpackie to 1.12% in pomorskie province; mortality rate due to aforesaid diseases varied between 1.5 per 100 000 population in podkarpackie to 9.8 in pomorskie province. Having referred to these differences, it should be noted, however, that they were strongly affected by the disparities between provinces in reporting the absolute number and percentage share of unverified sepsis.

As with the previous years, infectious and parasitic diseases in Poland accounted for a higher percentage of deaths in urban than rural population. In 2013, it was a cause of death of 0.70 of all deaths in urban areas while in rural areas – 0.45%. Mortality due to these diseases was higher in urban (7.0 per 100 000 population) than rural population (4.5) by 54.4%, with the differences to the detriment of urban areas observed in the majority of age groups, without any noticeable tendency.

In 2013, as in the previous years, the percentage of infectious and parasitic diseases in the causes of death in males (0.67%; mortality 7.3 per 100 000) was higher compared to females (0.53% and 4.9). Mortality due to infectious diseases was higher in males compared to females by 48.0%, with the largest difference to the detriment of males (more than 3.5-fold) reported in those aged 45-49 years, mainly due to considerably

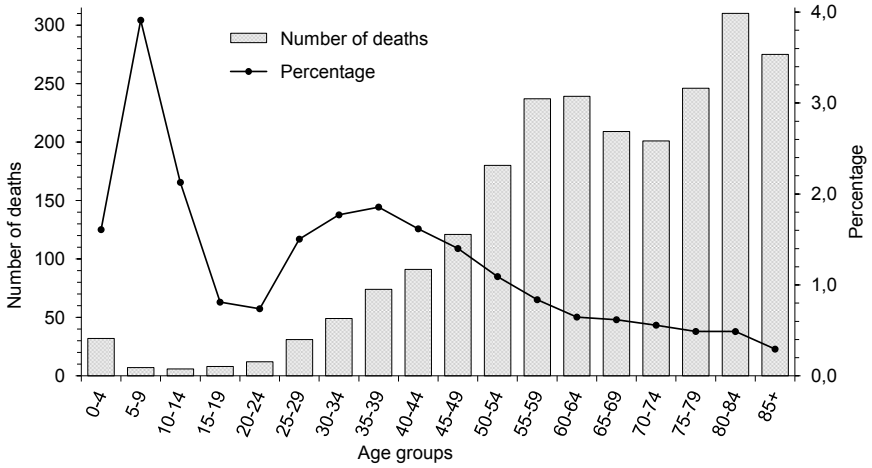

Fig. 3. Number of deaths and deaths from infectious diseases as percentage of all deaths by age group - Poland 2013

higher number of deaths due to tuberculosis, viral hepatitis and AIDS.

The highest number of deaths due to infectious and parasitic diseases was reported in the elder population (mode 80-84 years), while the highest mortality due to these diseases was noted in the eldest persons, i.e. aged over 84 years (45.6 per 100 000). Having collated the data with the small numbers of deaths in total, infectious diseases were of the highest share in mortality in children and adolescents aged up to 14 years, especially in the age group 5-9 years old (3.9%; mortality 0.4 per 100 000). In case of adults, infectious diseases were of the highest share in mortality in persons aged 25-44 years old, especially in the age group 35-39 years old (1.9%; 2.5). (Fig. 3).

Having considered deaths in children aged 0-4 years old, the percentage of infectious diseases amounted to 1.6%, while for newborns – 1.1% (mortality 5.2 per 100 000, analogous to the value observed last year), and 3.7%, 2.8%, 5.7% and 5.6% for children aged 2, 3, 4 and 5 years old, respectively.

SUMMARY

Irrespective of the fact that a decrease in the number of deaths (2 328) and mortality due to infectious diseases (6.0/100 000) was still observed in 2013, infectious diseases remain to be an important public health problem in Poland. Enhanced control of coding the underlying cause of death resulted in determining tuberculosis and its late sequelae (540 fatal cases; 23.2% of all deaths) as the first cause of deaths. Regardless of a sustained decreasing tendency of tuberculosis incidence, Poland still remains in a group of countries with tuberculosis incidence higher compared to the average noted in Western Europe countries. In 7 provinces, incidence exceeds 20/100 000, while in lubelskie province it amounts to 27.4. It is an alarming signal due to a known relation between tuberculosis incidence and living conditions of population, and, in case of lubelskie province, also border contacts with the countries with very high tuberculosis incidence and the presence of multi-drug-resistant *M. tuberculosis* strains. Of importance is also a high prevalence of hepatitis C, involving infections which occurred in the present year and a dozen of previous years. All types of viral hepatitis were attributed to 250 fatal cases. Intestinal infections caused by *Clostridium difficile*, which are to a large extent dependent on insufficiently controlled antibiotic therapy, caused 210 deaths, while bacterial meningoencephalitis - 128.

In 2013, a total of 1097 HIV infections and 151 AIDS cases were registered. The number of deaths due to AIDS was 123. Irrespective of an intensive health promotion and use of highly active antiretroviral therapy *(HART)* in comparison with 1997, i.e. a relatively early epidemic period, it corresponds to an increase of AIDS incidence by 43%, and number of deaths due to this disease by 116%. There is also an alarming increase in the percentage of HIV infections notified without providing a probable risk factor of infection, which hinders the orientation of actions aimed at preventing this disease.

In 2013, there was nearly 2-fold, compared to the previous year, increase in the number of influenza and influenza-like cases. High number of influenza cases, which is reported since years in Poland, results from a low influenza vaccination coverage in population. Since years, the percentage of persons vaccinated within recommended vaccinations is low, and it decreased additionally following 2009/2010 season.

Over 6-fold increase in the number of rubella cases resulted from compensatory epidemic. It affected mainly young boys from birth cohorts which were not subject to obligatory vaccination with MMR. Undoubtedly, these infections posed a threat to a small percentage of females at reproductive age, who were not vaccinated against rubella, but this epidemic resulted in an increase in the number of males with natural im-

munity. Obligatory immunization of boys with MMR vaccine in the successive years would reduce rubella and mumps incidence.

In the decade, there is a noticeable decreasing tendency in the number of food-borne poisonings and infections caused by bacteria *Salmonella* spp. while the number of viral intestinal infections increases. There is a necessity for increasing the number of laboratory-confirmed infections, not only salmonellosis but also other bacterial intestinal infections.

Compared to the previous year, there was an increase in the number of Lyme borreliosis cases in 2013. It may result from climate fluctuations but also increased interest in this disease and its better diagnosing.

A small number of notified legionellosis cases raises concerns with regard to the effectiveness of its diagnosis. It is recommended to attract physicians attention to infections caused by this pathogen and more precise surveillance over potential sources of infections, including water installations at hotels and cooling towers.

In 2013, introductions of infections to Poland concerned mainly dengue fever (13 cases) and malaria (36 cases). None of these cases resulted in death.

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