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HEPATITIS B IN POLAND IN 2013*

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ABSTRACT

OBJECTIVE. Evaluation of the epidemiological situation of hepatitis B in Poland in 2013 in comparison with the previous years.
MATERIAL AND METHODS. Epidemiological situation of hepatitis B in Poland in 2013 was evaluated on a basis of individual reports on acute and chronic hepatitis B cases registered by sanitary and epidemiological stations and aggregated data derived from annual bulletins "Infectious diseases and poisonings in Poland".
RESULTS. In 2013, a total of 1,541 hepatitis B cases were reported, including 36 co-infections with HBV and HCV. Compared to the previous year, incidence slightly decreased and amounted to 4.0 per 100,000 population. Acute stage accounted for 5.3% of all HBV infections (incidence - 0.21 per 100,000 population). Having compared to 2012, there was a slight increase in the incidence and share of acute stage in all HBV infections. The total number of acute hepatitis B cases, however, remained low. The highest incidence was reported in mazowieckie province for both acute (0.45 per 100,000) and chronic (7.40 per 100,000) hepatitis B. Similar to the previous year, males and urban population were the most affected group. Acute HBV infections were not identified in the age group 0-24 years which is subject to mandatory vaccination in neonatal period or at the age of 14 years. Acute and chronic stages of hepatitis B were most commonly diagnosed in persons aged 65-74 years (incidence – 0.44 per 100,000) and 40-44 years (incidence – 13.3 per 100,000), respectively.
According to the CSO data, a total of 7 and 38 fatal cases were registered in 2013 due to acute and chronic HBV infection, respectively.
CONCLUSIONS. In 2013, a decreasing trend of hepatitis B incidence was discontinued. Thus, it is important to monitor whether this situation would not be reverted in the successive years. Hepatitis B incidence, which is slightly lower compared to the previous year, suggested that the incidence is relatively stable. In case of acute infections, medical procedures remained to be the most commonly listed exposure. Having considered a higher number of infections, sanitary conditions in health care units should be improved.

Key words: *hepatitis B, infectious diseases, epidemiology, public health, vaccination, Poland, 2013.*

This paper aimed at evaluating the epidemiological situation of hepatitis B (HBV) in Poland in 2013 compared to the previous years.

MATERIAL AND METHODS

Evaluation of the epidemiological situation was based on the analysis of data derived from annual bulletins "Infectious diseases and poisonings in Poland" concerning the data as of 2007-2013 and "Vaccinations in Poland in 2013" (Warsaw, NIPH-NIH, CSI), individual reports on acute and chronic hepatitis B sent to the Department of Epidemiology of the NIPH-NIH by the sanitary and epidemiological stations and data on fatal cases provided by the Demographic Surveys and Labour Market Department of the Central Statistical Office.

In 2013, physicians who diagnosed or suspected HBV infection notified it to the State Sanitary Inspection in line with the existing legal provisions in Poland (Act of 5th December 2008 on the Prevention and Control of Infections and Infectious Diseases in Humans, Journal of Laws 2008 No. 234, item 1570 as amended). HBV

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Table I. Hepatitis B (total) in Poland 2007-2013. Number of cases and incidence per 100,000 population, percentage of acute and chronic cases, number and percentage of HBV/HCV coinfections by province.

Province	Median 2007-2011		2012		2013					
					Total		Acute	Chronic	HBV/HCV	
	Number of cases	Incidence	Number of cases	Incidence	Number of cases *	Incidence	%	%	Number of cases	%
POLAND	1 475	3.87	1 583	4.11	1541	4,00	5.3	94.7	36	2.3
1. Dolnośląskie	130	4.51	100	3.43	84	2.89	2.4	97.6	3	3.6
2. Kujawsko-pomorskie	103	4.99	105	5.01	106	5.06	0.9	99.1	4	3.8
3. Lubelskie	76	3.52	55	2.54	21	0.97	9.5	90.5	0	0.0
4. Lubuskie	18	1.78	35	3.42	30	2.93	6.7	93.3	2	6.7
5. Łódzkie	186	7.29	224	8.86	148	5.88	4.7	95.3	3	2.0
6. Małopolskie	27	0.82	9	0.27	22	0.66	31.8	68.2	3	13.6
7. Mazowieckie	208	3.99	226	4.27	417	7.86	5.8	94.2	10	2.4
8. Opolskie	82	7.95	40	3.95	42	4.17	4.8	95.2	0	0.0
9. Podkarpackie	62	2.91	145	6.81	96	4.51	9.4	90.6	0	0.0
10. Podlaskie	20	1.68	88	7.34	42	3.51	11.9	88.1	0	0.0
11. Pomorskie	63	2.82	34	1.49	58	2.53	8.6	91.4	0	0.0
12. Śląskie	172	3.70	160	3.46	158	3.43	4.4	95.6	6	3.8
13. Świętokrzyskie	71	5.55	78	6.12	44	3.46	0.0	100.0	1	2.3
14. Warmińsko-mazurskie	12	0.83	8	0.55	9	0.62	0.0	100.0	0	0.0
15. Wielkopolskie	192	5.64	249	7.20	242	6.99	2.1	97.9	3	1.2
16. Zachodniopomorskie	30	1.77	27	1.57	22	1.28	13.6	86.4	1	4.5

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw. Annals 2007-2014

* Data updated in regards to these published in the annual bulletins "Infectious diseases and poisonings in Poland in 2013"

infections were registered according to the criteria of definition for acute infection adopted by the European Commission and specified in its decision as of 28th April 2008 (2008/426/EC). This definition was introduced into routine surveillance in Poland in 2009.

Symptomatic, laboratory-confirmed (hepatitis B virus core IgM antigen specific antibody response) cases were registered as acute, confirmed cases. The remaining hepatitis B infections were registered on a basis of diagnosis made by the notifying physician.

RESULTS AND DISCUSSION

In 2013, a total of 1,541 hepatitis B cases were registered in Poland, including 36 (2.3%) co-infections with HBV and HCV. Compared to the previous year and median as of 2007-2011, the incidence was lower by 2.7% and higher by 3.4%, respectively, amounting to 4.0 per 100,000 (Tab.I). Having considered a decreasing share of acute infections, regardless of a slight reduction of incidence in country, fluctuations in incidence rates noted in particular provinces were of more intensive nature.

ACUTE HEPATITIS B

In 2013, a total of 81 acute HBV infections were reported in Poland (incidence – 0.21 per 100,000 population) which accounted for a 5% increase compared to the previous year. Acute stage constituted 5.3 % of all notified HBV infections (Tab.I, Tab.II). Out of the registered acute infections, 86% met the criteria

Table II. Acute hepatitis B in Poland 2007-2013. Number of cases and incidence per 100,000 population by province.

Province	Median 2007-2011		2012		2013	
	Number of cases	Incidence	Number of cases	Incidence	Number of cases	Incidence
POLAND	199	0.52	78	0.20	81	0.21
1. Dolnośląskie	8	0.28	5	0.17	2	0.07
2. Kujawsko-pomorskie	5	0.24	3	0.14	1	0.05
3. Lubelskie	6	0.28	6	0.28	2	0.09
4. Lubuskie	4	0.40	2	0.20	2	0.20
5. Łódzkie	14	0.55	6	0.24	7	0.28
6. Małopolskie	21	0.64	2	0.06	7	0.21
7. Mazowieckie	38	0.73	12	0.23	24	0.45
8. Opolskie	9	0.87	5	0.49	2	0.20
9. Podkarpackie	7	0.33	4	0.19	9	0.42
10. Podlaskie	12	1.00	4	0.33	5	0.42
11. Pomorskie	8	0.35	2	0.09	5	0.22
12. Śląskie	34	0.73	13	0.28	7	0.15
13. Świętokrzyskie	3	0.24	0	0.00	0	0.00
14. Warmińsko-mazurskie	8	0.56	3	0.21	0	0.00
15. Wielkopolskie	13	0.38	7	0.20	5	0.14
16. Zachodniopomorskie	5	0.30	4	0.23	3	0.17

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw. Annals 2007-2014

of confirmed cases, i.e. they presented typical clinical symptoms and hepatitis B virus core IgM antigen specific antibody response.

In all provinces, acute infections occurred less frequently than chronic infections – the highest percentage of acute hepatitis B – 31.8% was reported in małopolskie province. Acute HBV infections were not identified in two provinces (świętokrzyskie and warmińsko-mazurskie), while in świętokrzyskie province HBV infections were also not reported in 2012 (Tab.II).

A decrease of incidence was reported in 8 provinces, in two provinces incidence did not change and in 6 provinces the incidence was on the increase with the highest rise noted in małopolskie province where there was a 3.5-fold increase in the number of HBV cases compared to 2012.

The highest incidence of acute hepatitis B was noted in mazowieckie province (0.45 per 100,000) where the cases registered accounted for 30% of all acute infections.

Similar to the previous years, males and urban population were the most affected group (Tab. IV).

A mean age of acute hepatitis B cases was 52 years (median 50) while patients below 40 years accounted only for 33% of all patients. The highest incidence was observed in the age group 65-74 years (0.44 per 100,000) which indicated a shift of the peak of infections to the older groups compared to the previous years. No infections were identified in persons who underwent mandatory vaccination against HBV (Tab. IV).

Information on vaccination against HBV was achieved from 96% of patients. Out of acute hepatitis B cases, six were fully vaccinated, including three persons over the age of 70 years, while five persons were partially vaccinated or data on the number of vaccine doses administered was lacking.

Based on the data derived from individual reports, an analysis of probable routes of transmission was determined. It was established that the majority of infections (68%) were most probably associated with medical procedures accompanied by skin breakdown. Out of this group, for 5 patients visit to the dentist was the only known potential exposure.

The majority of patients infected in health care units reported more than one exposure in the incubation period of disease, most commonly these were medical procedures and injections.

In case of 6% and 4% of acute hepatitis B cases, the infection was most probably transmitted via sexual route and through household contact with person infected with HBV, respectively.

In 2013, all acute hepatitis B cases were hospitalized. According to the data of the CSO, a total of 7 fatal cases were registered in 2013 - 4 persons fewer compared to the previous year.

CHRONIC HEPATITIS B

In 2013, a total of 1,460 chronic hepatitis B cases were registered with the incidence amounting to 3.79 per 100,000 population. Compared to the previous year, it was lower by 3.1% (Tab. III). Since 2010, no considerable fluctuations of incidence were observed (Fig.1).

Chronic hepatitis B incidence increased in seven provinces while in the remaining provinces its value decreased, ranging from 0.45 per 100,000 in małopolskie province to 7.4 per 100,000 in mazowieckie province. Such large differences in incidence between provinces are noted for many years. Thus, its interpretation should be supplemented by the data on the notification rate in particular provinces.

Having referred to the previous years, the highest increase of the incidence was reported in małopolskie province (by 114.3% with the total number of notified cases remaining very low) while the largest decrease was noted in lubelskie province (by 61.1 %) (Tab. III).

In 2013, chronic stage of HBV infection was most commonly reported in persons aged 40-44 years (Tab. V). One infection was registered in the age group 0-14 years which is subject to vaccination in neonatal period. It was a 8-year-old boy, who received the full

Table III. Chronic hepatitis B in Poland 2007-2013. Number of cases and incidence per 100, 000 population by province.

Province	Median 2007-2011		2012		2013	
	Number of cases	Incidence	Number of cases	Incidence	Number of cases	Incidence
POLAND	1276	3.34	1 505	3.91	1 460	3.79
1. Dolnośląskie	115	3.94	95	3.26	82	2.82
2. Kujawsko-pomorskie	94	4.54	102	4.86	105	5.01
3. Lubelskie	70	3.24	49	2.26	19	0.88
4. Lubuskie	12	1.19	33	3.23	28	2.74
5. Łódzkie	174	6.85	218	8.62	141	5.60
6. Małopolskie	9	0.27	7	0.21	15	0.45
7. Mazowieckie	170	3.26	214	4.04	393	7.40
8. Opolskie	73	7.07	35	3.46	40	3.97
9. Podkarpackie	42	2.00	141	6.62	87	4.09
10. Podlaskie	6	0.50	84	7.00	37	3.09
11. Pomorskie	50	2.27	32	1.40	53	2.31
12. Śląskie	121	2.61	147	3.18	151	3.43
13. Świętokrzyskie	63	4.95	78	6.12	44	3.46
14. Warmińsko-mazurskie	8	0.56	5	0.34	9	0.62
15. Wielkopolskie	176	5.17	242	7.00	237	6.84
16. Zachodniopomorskie	24	1.42	23	1.34	19	1.10

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw. Annals 2007-2014

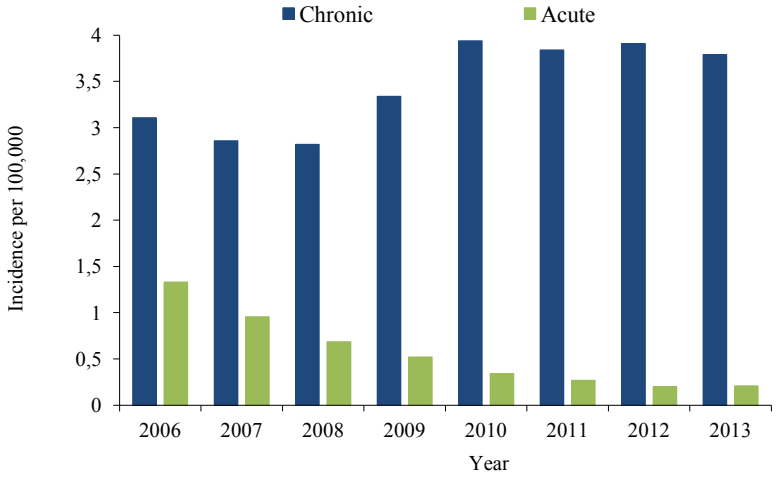

Fig. 1. Acute and chronic hepatitis B in Poland 2006-2013. Incidence per 100, 000 population

vaccination following the delivery. Hepatitis B surface antigen (HBs Ag) was detected in his mother when the boy was at the age of 2 years. His mother, however, could have been infected during pregnancy or delivery, suggesting probable vertical transmission of infection.

Persons aged 40-44 years were the most affected age group in both urban and rural areas. Having considered this age group, the incidence in urban areas was 1.4-fold higher compared to rural areas. As with the previous years, males were affected more frequently than females (Fig. 3).

Data from the individual reports suggested that 22% of chronic hepatitis B cases received full vaccination against HBV.

It was determined that the most probable routes of transmission were surgeries and medical procedures (65%). In case of 9% and 3.7% of persons, household contact and occupational exposure were established, respectively. Out of all registered chronic hepatitis B cases, infection was most commonly detected during testing of blood donors or candidates for blood donors - 14%, examinations conducted due to different indications in primary health care units - 13% and testing of pregnant women - 10%.

In 2013, 50% of all chronic HBV cases were hospitalized. Pursuant to the CSO data, a total of 38 persons died due to chronic hepatitis B in 2013.

VACCINATION AGAINST HEPATITIS B

In 2013, no major amendments were introduced into the National Immunization Programme (NIP) compared to 2012. Only slight modifications were included resulting from changes implemented in the previous year, i.e. children with birth weight <2,000g should be administered a 4-dose vaccination at 0; 1; 2; 12 months (previously - 0; 1; 2; 6 months). Furthermore, a recommendation concerning the age of administration of first vaccine in children born prematurely was speci-

Table IV. Acute hepatitis B in Poland 2013. Number of cases, incidence per 100, 000 population and percentage by age, gender, and location (urban/rural)

Age, years	Gender						Location						Total		
	Male			Female			Urban			Rural					
	Number of cases	Incidence	%	Number of cases	Incidence	%	Number of cases	Incidence	%	Number of cases	Incidence	%	Number of cases	Incidence	%
0 - 24	0	0,00	0,0	0	0,00	0,0	0	0,00	0,0	0	0,00	0.0	0	0,00	0,0
25 - 29	5	0.32	10.4	1	0.07	3,0	5	0.26	8.9	1	0.08	4.0	6	0.19	7.4
30 - 34	10	0.61	20.8	2	0.13	6.1	10	0.50	17.9	2	0.17	8.0	12	0.37	14.8
35 - 39	7	0.46	14.6	3	0.20	9.1	7	0.38	12.5	3	0.26	12.0	10	0.34	12.3
40 - 44	3	0.24	6.3	3	0.24	9.1	2	0.13	3.6	4	0.39	16.0	6	0.24	7.4
45 - 49	5	0.42	10.4	2	0.17	6.1	3	0.22	5.4	4	0.41	16.0	7	0.30	8.6
50 - 54	1	0.08	2.1	4	0.30	12.1	4	0.25	7.1	1	0.10	4.0	5	0.19	6.2
55 - 59	3	0.21	6.3	2	0.13	6.1	5	0.26	8.9	0	0,00	0.0	5	0.17	6.2
60 - 64	5	0.42	10.4	2	0.14	6.1	5	0.29	8.9	2	0.23	8.0	7	0.27	8.6
65 - 74	6	0.47	12.5	7	0.41	21.2	6	0.31	10.7	7	0.69	28.0	13	0.44	16.0
75 +	3	0.35	6.3	7	0.40	21.2	9	0.56	16.1	1	0.10	4.0	10	0.38	12.3
Total	48	0.26	100.0	33	0.17	100.0	56	0.24	100,0	25	0.16	100.0	81	0.21	100.0

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw, 2014

Table V. Chronic hepatitis B in Poland 2013. Number of cases, incidence per 100, 000 population and percentage by age, gender, and location (urban/rural)

Age, years	Gender						Location						Total		
	Male			Female			Urban			Rural					
	Number of cases	Incidence	%	Number of cases	Incidence	%	Number of cases	Incidence	%	Number of cases	Incidence	%	Number of cases *	Incidence	%
0 - 4	0	0.00	0.00	0	0.00	0,0	0	0.00	0.0	0	0.00	0.0	0	0.00	0.0
5 - 9	1	0.10	0.12	0	0.00	0,0	0	0.00	0.0	1	0.12	0.2	1	0.05	0.1
10 - 14	0	0.00	0.00	0	0.00	0,0	0	0.00	0.0	0	0.00	0.0	0	0.00	0.0
15 - 19	43	3.87	5.00	25	2.36	4.1	40	3.45	4.0	28	2.77	6.0	68	3.13	4.7
20 - 24	89	6.58	10.4	76	5.85	12.5	91	6.09	9.2	74	6.38	15.8	165	6.22	11.3
25 - 29	86	5.47	10.1	94	6.16	15.5	128	6.77	12.9	52	4.30	11.1	180	5.81	12.3
30 - 34	101	6.21	11.8	83	5.25	13.7	130	6.44	13.1	54	4.54	11.6	184	5.74	12.6
35 - 39	116	7.70	13.6	71	4.84	11.7	141	7.69	14.2	46	4.03	9.9	187	6.29	12.8
40 - 44	119	9.40	13.9	81	6.52	13.4	133	8.97	13.4	67	6.53	14.3	200	7.97	13.3
45 - 49	84	7.13	9.80	43	3.67	7.1	89	6.47	9.0	38	3.90	8.1	127	5.40	8.7
50 - 54	82	6.26	9.60	39	2.89	6.4	79	4.89	8.0	42	4.02	9.0	121	4.55	8.3
55 - 59	60	4.25	7.0	32	2.10	5.3	69	3.63	7.0	23	2.22	4.9	92	3.13	6.3
60 - 64	31	2.59	3.60	18	1.30	3.0	32	1.86	3.2	17	1.96	3.6	49	1.89	3.4
65 - 74	20	1.58	2.30	30	1.76	5.0	34	1.74	3.4	16	1.58	3.4	50	1.68	3.4
75 +	22	2.54	2.60	14	0.81	2.3	27	1.68	2.7	9	0.91	1.9	36	1.38	2.5
Total	854	4.58	100.0	606	3.05	100.0	993	4.26	100.0	467	3.07	100.0	1 460	3.79	100.0

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw, 2014

* Data updated in regards to these published in the annual bulletins "Infectious diseases and poisonings in Poland in 2013"

fied, i.e. children in a stable clinical condition born below week 32 of pregnancy should be administered a first dose of vaccine a few days prior to their discharge from neonatal ward.

Information on booster dose of vaccine against HBV for patients suffering from chronic diseases remained exclusively in the section "Remarks" in a part concerning recommended vaccinations, which are not financed from the budget of the minister of health. It was deleted from the "Remarks" to mandatory vaccinations of persons particularly exposed to infection (in 2012 mandatory vaccination of patients with chronic diseases was waived with an exception of those suffering from chronic renal disease).

Having compared the data published in bulletin "Vaccinations in Poland in 2013", HBV vaccination coverage of children aged 2 years (born in 2012) was 99.6%. Its value was slightly lower compared to the vaccination coverage of children at the same age in previous year. Similar to the previous year, differences in the vaccination coverage between provinces were very low (99.4%-99.9%).

Out of the persons from risk groups subject to mandatory vaccination, the highest percentage of those unvaccinated in 2013 was reported in close contacts of HBV cases (30.2%) – similar percentage of unvaccinated persons in this group is noted for a few years.

Compared to the previous years, the number of vaccine adverse events (VAE) following the vaccination against HBV (second-generation, recombinant vaccines) was higher. A total of 24 local VAE (*Engerix-B, Euvax-B, HBvax-Pro, Hepavax-Gene*) and 32 generalized VAE, including one anaphylactic shock and two hypotensive-hyporeactive episodes were reported.

In 2013, one fatal case was reported which occurred following the administration of the third dose of EUVAX-B, however, besides time, no other evidence was determined which would allow for linking this fatal outcome to vaccination.

SUMMARY AND CONCLUSIONS

In 2013, no considerable changes in hepatitis B incidence were reported compared to the previous year. However, a decreasing trend of acute HBV infection incidence was discontinued. There is a necessity of monitoring the changes of acute hepatitis B incidence in the successive years. Following a rapid decrease, a stabilization in the number of new infections or even reverting the earlier decreasing trend may be observed.

No new HBV infections were identified in the age groups subject to mandatory vaccination against HBV. It confirms the effectiveness of the current immunization programme.

Contrary to the previous years, no increase in the share of acute HBV infections transmitted via sexual route or injection drug use was noted in 2013. Out of acute hepatitis B, infections acquired in health care units still predominated. Thus, there is a necessity of improving their sanitary conditions and further recommending vaccination against HBV to unvaccinated persons.

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