

Małgorzata Stępień, Katarzyna Piwowarow

HEPATITIS B IN POLAND IN 2012

Department of Epidemiology National Institute of Public Health
- National Institute of Hygiene in Warsaw

ABSTRACT

OBJECTIVES. Evaluation of the epidemiological situation of hepatitis B in Poland in 2012 in comparison with previous years.

MATERIAL AND METHODS. The evaluation was based on the results of analysis of individual case reports of acute hepatitis B recorded by the Sanitary-Epidemiological Stations and aggregate data of national surveillance published in annual bulletins "Infectious diseases and poisonings in Poland" for the years 2006-2012.

RESULTS. In Poland, in 2012 a total of 1 583 cases of hepatitis B were reported, including 33 cases of dual-infection with hepatitis B virus (HBV) and hepatitis C virus (HCV). The incidence was 4.11 per 100,000 inhabitants and compared to the preceding year its value did not change.

The acute cases accounted for 4.9% of all hepatitis B cases, the incidence - 0.20 per 100,000 population. Compared to 2011, there was a further decline in both incidence and share of acute stage of infection in the total number of cases.

The highest incidence of acute and chronic form of hepatitis B was reported in Opolskie (0.49 per 100,000) and Łódzkie provinces (8.62 per 100 thousand.), respectively. More frequently men and urban dwellers were ill. In the age group 0-14 years, which was entirely covered by universal vaccination of infants, no acute cases were found while the incidence of chronic hepatitis B in this age group was 0.14 per 100,000. Chronic hepatitis B was most frequently detected in people aged 40-44 years (incidence 7.13 per 100,000) and acute disease - in those aged 45-49 years (incidence 0.46 per 100,000).

Medical procedures in healthcare settings were still the predominant route of infection (56% of all acute cases). Infections contracted via sexual contacts, household contact with an infected person and through injection drug use accounted together for 14% of all acute hepatitis B cases.

In 2012, 11 and 41 persons died due to acute and chronic stage of hepatitis B, respectively.

CONCLUSIONS. A clear downward trend of the incidence of acute hepatitis B with an unchanged mode of HBV transmission in Poland, indicates an improvement in compliance with recommended infection control procedures at all levels of medical care. The maintenance of the incidence of acute hepatitis B at a low level is possible due to the continuation of an universal vaccination program against HBV in combination with measures that stop the spread of infections. In view of persistent pattern of hepatitis B transmission in Poland in medical settings, it is advisable to recommend immunization not only to individuals at increased risk but also all previously unvaccinated persons. Simultaneously, activities leading to the improvement of detectability and the availability of the recommended treatment of chronic hepatitis B should be strengthened.

Key words: *hepatitis B, infectious diseases, epidemiology, public health, immunization, Poland, 2012*

The aim of the paper is to assess the epidemiological situation of hepatitis B in Poland in 2012 in comparison with the previous year.

MATERIAL AND METHODS

The evaluation of the epidemiological situation was based on the results of the analysis of data from the following sources:

- the annual bulletins "Infectious diseases and poisonings in Poland" for the years 2006-2012, and "Vaccinations in Poland in 2012" (Warsaw, NIPH-NIH, CSI)
- Individual case reports of acute hepatitis B sent to the Department of Epidemiology, NIPH-NIH by Sanitary-Epidemiological Stations
- Data on deaths from the Department of Demographic Surveys and Labour Market in Central Statistical Office.

Cases of hepatitis B are reported to the State Sanitary Inspection by physicians who diagnose or suspect the disease on the basis of existing legislation (Law on Prevention and Control of infections and infectious diseases in humans of December 5, 2008, as amended). In 2012, hepatitis B cases meeting the criteria of the case definition for acute hepatitis B approved by the EC in its decision of 2008/426/EC and introduced into routine surveillance in Poland in 2009 were registered. According to the definition, acute cases were all symptomatic cases, laboratory confirmed by the presence of anti-HBc IgM and probable acute cases were symptomatic cases epidemiologically linked to a confirmed case of hepatitis B. Chronic hepatitis B were recorded only on the basis of clinical diagnosis of reporting physician.

RESULTS AND DISCUSSION

In 2012, in Poland a total of 1583 hepatitis B cases, including 33 (2.1%) caused by dual-infection with HBV and HCV were registered. In total the incidence was 4.11 per 100,000 population - the same as in 2011 and 6% higher than the median in 2006-2010. It could suggest stabilization of hepatitis B incidence at a relatively constant level of ~ 4 per 100,000 - such incidence with small fluctuations is observed since 2004 (Fig. 1). From the beginning of the separate registration of acute and chronic hepatitis B (in 2005), divergent trends in the incidence of acute and chronic stages are observed, i.e.

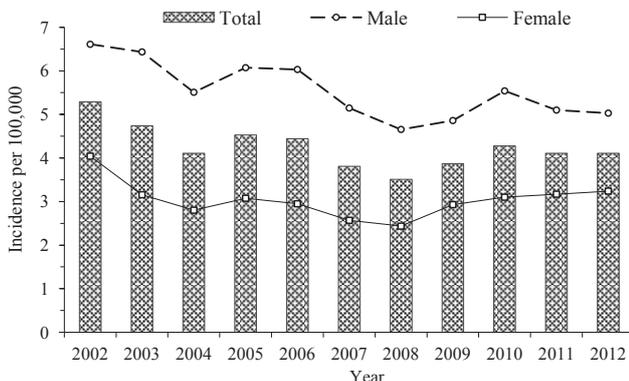


Fig. 1. Hepatitis B in Poland 2002-2012. Incidence per 100,000 population by gender

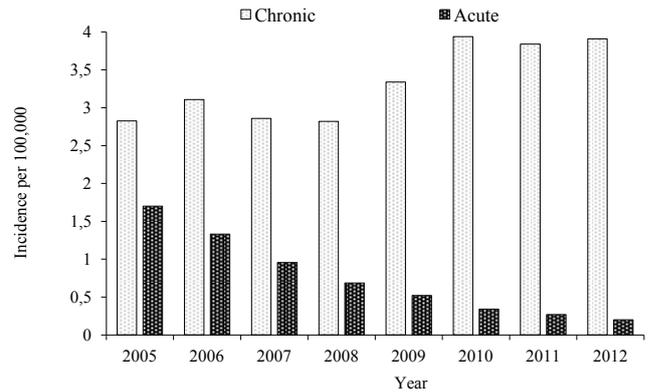


Fig. 2. Acute and chronic hepatitis B in Poland 2005-2012. Incidence per 100,000 population

declining for acute stage and slightly rising for chronic stage. As a result of decreasing share of acute disease in the total number of HBV cases, the total HBV incidence is determined mainly by the number of chronic cases (Fig. 2). Despite the maintenance of unchanged incidence for the country, incidence fluctuations in provinces and the increasing territorial differentiation were observed - incidence declined in 10 provinces, with the largest decline amounting to 65% in Opolskie province, and increased in 6 provinces with the highest growth, more than 2-fold, in Podkarpackie province. The ratio of the highest (in Łódzkie 8.86 / 100,000) to the lowest incidence (in Małopolskie 0.27 / 100,000, as in 2011) was as 33:1.

ACUTE HEPATITIS B

In 2012, 78 cases of acute hepatitis B (incidence 0.20 per 100,000 population) were registered in Poland with acute forms accounting for 4.9% of the total number of registered hepatitis B cases (Tab.I, Tab.II). Compared to the previous year, there was a further decline in the number of acute cases - by 26%. The cases reported by physicians as acute hepatitis B, not meeting the criteria of currently existing case definition, were classified as hepatitis B of indeterminate stage and analyzed together with cases reported as chronic, for which no case definition was applied. Among the registered acute cases, 89% met the criteria for a confirmed case (i.e. the typical clinical symptoms and detection of specific anti-HBcIgM were observed) and 11% were registered as probable acute cases. The decrease in incidence was observed in 8 provinces, in two provinces incidence remained unchanged, and in 6 there was an increase (the largest in Podkarpackie, but the total number of cases in this region remained low - four cases). In all provinces, acute cases accounted for an evident minority of the total number of hepatitis B (Tab.I), the highest share of acute stage was recorded in Warmińsko-Mazurskie

Table I. Hepatitis B (total) in Poland 2006-2012. 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 2006-2010		2011		2012					
	Number of cases	Incidence	Number of cases	Incidence	Total		Acute	Chronic	HBV/HCV	
					Number of cases	Incidence	%	%	Number of cases	%
POLAND	1 475	3.87	1 583	4.11	1583	4.11	4.9	95.1	33	2.1
1. Dolnośląskie	137	4.76	122	4.18	100	3.43	5.0	95.0	3	3.0
2. Kujawsko-pomorskie	113	5.46	89	4.24	105	5.01	2.9	97.1	0	0.0
3. Lubelskie	106	4.90	60	2.76	55	2.54	10.9	89.1	0	0.0
4. Lubuskie	17	1.69	37	3.62	35	3.42	5.7	94.3	1	2.9
5. Łódzkie	186	7.29	197	7.76	224	8.86	2.7	97.3	7	3.1
6. Małopolskie	43	1.31	16	0.48	9	0.27	22.2	77.8	0	0.0
7. Mazowieckie	178	3.43	233	4.42	226	4.27	5.3	94.7	7	3.1
8. Opolskie	68	6.57	114	11.23	40	3.95	12.5	87.5	0	0.0
9. Podkarpackie	51	2.43	62	2.91	145	6.81	2.8	97.2	3	2.1
10. Podlaskie	20	1.68	76	6.32	88	7.34	4.5	95.5	3	3.4
11. Pomorskie	63	2.82	72	3.16	34	1.49	5.9	94.1	2	5.9
12. Śląskie	184	3.95	124	2.68	160	3.46	8.1	91.9	4	2.5
13. Świętokrzyskie	70	5.46	71	5.55	78	6.12	0.0	100.0	2	2.6
14. Warmińsko-mazurskie	16	1.12	12	0.83	8	0.55	37.5	62.5	0	0.0
15. Wielkopolskie	178	5.26	263	7.62	249	7.20	2.8	97.2	1	0.4
16. Zachodniopomorskie	30	1.77	35	2.03	27	1.57	14.8	85.2	0	0.0

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw. Annals 2006-2012

Table II. Acute hepatitis B in Poland 2006-2012. Number of cases and incidence per 100, 000 population by province

Province	Median 2006-2010		2011		2012	
	Number of cases	Incidence	Number of cases	Incidence	Number of cases	Incidence
POLAND	262	0.69	104	0.27	78	0.20
1. Dolnośląskie	11	0.38	7	0.24	5	0.17
2. Kujawsko-pomorskie	8	0.39	3	0.14	3	0.14
3. Lubelskie	17	0.79	4	0.18	6	0.28
4. Lubuskie	6	0.59	3	0.29	2	0.20
5. Łódzkie	19	0.75	12	0.47	6	0.24
6. Małopolskie	33	1.01	7	0.21	2	0.06
7. Mazowieckie	48	0.92	26	0.49	12	0.23
8. Opolskie	10	0.97	4	0.39	5	0.49
9. Podkarpackie	12	0.57	1	0.05	4	0.19
10. Podlaskie	14	1.18	12	1.00	4	0.33
11. Pomorskie	8	0.36	8	0.35	2	0.09
12. Śląskie	46	0.99	8	0.17	13	0.28
13. Świętokrzyskie	8	0.63	1	0.08	0	0.00
14. Warmińsko-mazurskie	8	0.56	3	0.21	3	0.21
15. Wielkopolskie	16	0.47	3	0.09	7	0.20
16. Zachodniopomorskie	7	0.41	2	0.12	4	0.23

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw. Annals 2006-2012

- 37.5%. In one province - Świętokrzyskie, there were no cases of acute hepatitis B.

In 2012, all patients with acute hepatitis B were hospitalized.

As in previous years, more frequently men and urban residents (twice as frequently) were ill (Tab.IV). Noteworthy that the high advantage of incidence of men and urban residents is maintained compared to chronic hepatitis B, where the predominance of men and those living in cities is decreasing.

The mean age of patients with acute hepatitis B was 49 years old (median 50 years), persons under 40 years of age accounted for only 30% of all patients. The highest incidence occurred in the age group 45-49 years (0.46/ 100,000), which in comparison with the previous year means shifting of the peak incidence to the older age groups.

The lowest incidence was in the age group 0-19 years (0.01/100,000; one case), while in the age group 20-24 years which was entirely covered by mandatory vaccination at the age of 14, the incidence was rela-

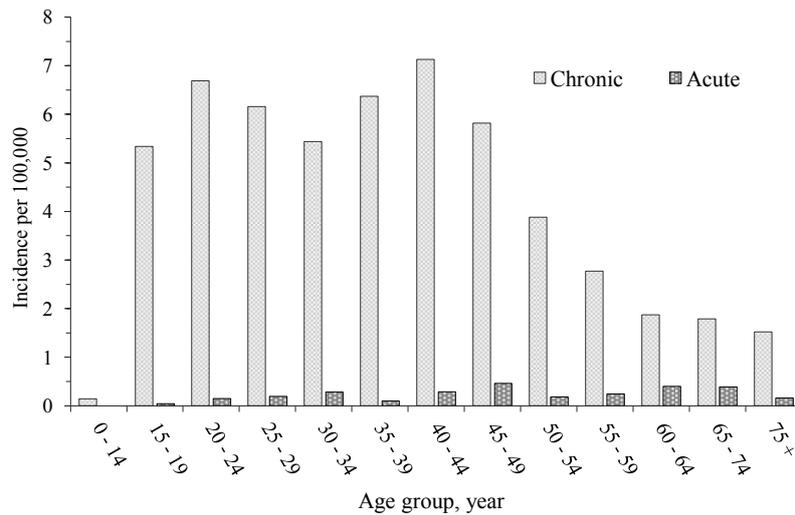


Fig. 3. Acute and chronic hepatitis B in Poland in 2012. Incidence per 100,000 population by age

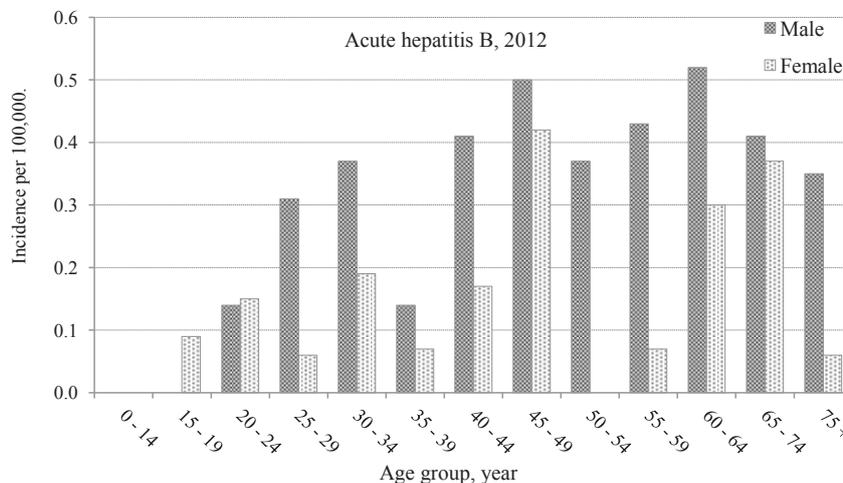


Fig. 4. Acute hepatitis B in Poland in 2012. Incidence per 100,000 population by age and gender

tively high and amounted to 0.15 per 100,000 (Fig.3 and Fig.4). In this age group 4 persons fell ill, two men and two women, including one of Ukrainian nationality. None of these people were vaccinated.

The information on vaccination against hepatitis B was obtained from 74 patients (95%): in this group six patients (8%) were previously vaccinated - 4 individuals (5.4%) received a full primary course of vaccination, and 2 persons were partly vaccinated. Based on data contained in the individual case reports, the probable routes of infection were analyzed. The infections probably occurred most frequently during medical procedures in health care settings (44 cases, 56% of all acute cases), including 3 persons infected during invasive surgery combined with blood transfusion. The majority of patients infected in medical facilities indicated more than one exposure in the incubation period of the disease, and the most common were the invasive surgeries, injections, dental procedures, endoscopies, biopsies, blood transfusions. In 5 (6.4%) cases, infection probably occurred via sexual contact (three men and two women aged 31-57 years, hetero- and homosexual contacts), in

four cases (5.1%) infection was acquired by injection drug use and in two cases household contact with HBV infected person was found. Other five patients had different exposure like cosmetic procedure abroad, injury during work (non-medical), sharing lancing device (for glucometers) and imprisonment. In 22% of cases, the route of transmission was not identified.

In 2012, according to preliminary data of the Department of Demographic Surveys and Labour Market in Central Statistical Office, 11 persons died due to acute hepatitis B - three persons more than in 2011.

CHRONIC HEPATITIS B

In 2012, 1,505 cases of chronic hepatitis B were reported, which accounted for 95.1% of all reported hepatitis B cases. The incidence was 3.91 per 100,000 inhabitants and was higher by 1.8% than in the previous year. It suggests that the incidence is relatively stable (Fig. 2) and annual variation over the last five years can be explained by periodic fluctuations and varying

Table III. Chronic hepatitis B in Poland 2006-2012. Number of cases and incidence per 100, 000 population by province

Province	Median 2006-2010		2011		2012	
	Number of cases	Incidence	Number of cases	Incidence	Number of cases	Incidence
POLAND	1185	3.11	1 479	3.84	1 505	3.91
1. Dolnośląskie	126	4.38	115	3.94	95	3.26
2. Kujawsko-pomorskie	108	5.22	86	4.10	102	4.86
3. Lubelskie	89	4.11	56	2.57	49	2.26
4. Lubuskie	9	0.89	34	3.32	33	3.23
5. Łódzkie	174	6.85	185	7.29	218	8.62
6. Małopolskie	10	0.30	9	0.27	7	0.21
7. Mazowieckie	130	2.50	207	3.92	214	4.04
8. Opolskie	58	5.61	110	10.83	35	3.46
9. Podkarpackie	39	1.86	61	2.87	141	6.62
10. Podlaskie	6	0.50	64	5.32	84	7.00
11. Pomorskie	50	2.27	64	2.81	32	1.40
12. Śląskie	125	2.67	116	2.51	147	3.18
13. Świętokrzyskie	56	4.37	70	5.47	78	6.12
14. Warmińsko-mazurskie	8	0.56	9	0.62	5	0.34
15. Wielkopolskie	158	4.67	260	7.54	242	7.00
16. Zachodniopomorskie	23	1.36	33	1.92	23	1.34

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw. Annals 2006-2012

sensitivity of surveillance system. As a result of improving the quality of acute hepatitis B surveillance, acute cases are recorded only after verifying the correctness of reports (consistent with the case definition), while in the surveillance of chronic hepatitis B, in 2012, as in previous years, a specific case definition was not applied. The chronic cases were recorded only on the basis of the reporting doctor diagnosis.

The incidence of chronic hepatitis B in 2012 ranged from 0.21 per 100,000 in Małopolskie to 8.62 per 100,000 in Łódzkie province. Such significant differences in incidence in the country are maintained since many years and may be the result of, among others, differences in reporting and carrying out the surveillance of the infections diagnosed in the past (HBsAg carriers). Overall, in comparison with the previous year incidence decreased in nine provinces and rose in seven. The largest decrease, by 68%, was reported in Opolskie province. Consequently, the incidence in this province which for a few years remained at the highest level in the country, moved closer to the average for the country.

The highest increase of incidence, more than 2-fold, occurred in Podkarpackie province (Table III). A total of 58.3% of patients with chronic hepatitis B were hospitalized; in two provinces: Podkarpackie and Podlaskie more than 95% of patients were hospitalized whereas in Mazowieckie the percentage of hospitalization was the lowest - 27% (in the previous year, the highest and lowest % of hospitalized HBV patients were recorded in the same provinces).

As in previous years, in 2012, more frequently men than women (incidence 4.76 and 3.10 per 100,000, respectively which corresponds to M: F = 1.5) and urban

residents compared to those living in countryside (incidence respectively 4.31 and 3.28 per 100,000) were ill.

The highest incidence was found among men aged 40-44 years (8.85 per 100,000) and among women aged 20-29 years (incidence 5.8 per 100,000). The lowest incidence of chronic HBV was in children under 14 (0.14 per 100,000, 8 cases overall), who were totally covered by mandatory vaccination against hepatitis B of infants (Table V). Relatively low incidence in patients over 60 years old should be also noted. The incidence in the age group 15-19 years, after many years (since 2006) of remaining at the highest level, decreased to 5.34 per 100,000 (greater decline, nearly 2-fold, was observed in rural areas than in the cities). Given earlier forecasts, it should be followed by a further decline in the coming years. The decrease of incidence in this age group is associated with, as described earlier, entrance into this age group persons which were vaccinated as the first in infancy.

According to the preliminary data of the Department of Demographic Surveys and Labour Market of the Central Statistical Office, 41 people died due to chronic hepatitis B in 2012, this was one person more than in 2011.

VACCINATIONS AGAINST HEPATITIS B

In 2012, universal vaccination program relating to the vaccination against hepatitis B was expanded with a recommendation concerning vaccination of newborns with low birth weight. For children with birth weight less than 2,000 g, 4-dose vaccination given at 0; 1; 2; 6 months was implemented. This change arise from the

Table IV. Acute hepatitis B in Poland 2012. 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	%												
0 - 14	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
15 - 19	0	0.00	0.0	1	0.09	3.7	1	0.08	1.7	0	0.00	0.0	1	0.04	1.3
20 - 24	2	0.14	3.9	2	0.15	7.4	2	0.13	3.4	2	0.17	10.0	4	0.15	5.1
25 - 29	5	0.31	9.8	1	0.06	3.7	6	0.30	10.3	0	0.00	0.0	6	0.19	7.7
30 - 34	6	0.37	11.8	3	0.19	11.1	6	0.30	10.3	3	0.26	15.0	9	0.28	11.5
35 - 39	2	0.14	3.9	1	0.07	3.7	3	0.17	5.2	0	0.00	0.0	3	0.10	3.8
40 - 44	5	0.41	9.8	2	0.17	7.4	6	0.42	10.3	1	0.10	5.0	7	0.29	9.0
45 - 49	6	0.50	11.8	5	0.42	18.5	8	0.57	13.8	3	0.31	15.0	11	0.46	14.1
50 - 54	5	0.37	9.8	0	0.00	0.0	2	0.12	3.4	3	0.28	15.0	5	0.18	6.4
55 - 59	6	0.43	11.8	1	0.07	3.7	5	0.26	8.6	2	0.20	10.0	7	0.24	9.0
60 - 64	6	0.52	11.8	4	0.30	14.8	7	0.42	12.1	3	0.36	15.0	10	0.40	12.8
65 - 74	5	0.41	9.8	6	0.37	22.2	8	0.43	13.8	3	0.31	15.0	11	0.39	14.1
75 +	3	0.35	5.9	1	0.06	3.7	4	0.25	6.9	0	0.00	0.0	4	0.16	5.1
Total	51	0.27	100.0	27	0.14	100.0	58	0.25	100.0	20	0.13	100.0	78	0.20	100.0

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw, 2013

observation that children born with a birth weight of <2,000 g produce significantly lower levels of anti-HBs antibodies in response to vaccination in the first days of life; differences in response level off after ~ 30 days of age, regardless of birth weight.

At the same time, compared with the year 2011, mandatory vaccinations (free of charge) of HIV-infected patients, children with congenital or acquired immune defect, patients with chronic renal failure especially those undergoing dialysis and patients with chronic liver damage (caused by viral, autoimmune, metabolic or alcohol diseases) were waived. Only the vaccination for HCV infected patients was remained. This change has triggered concerns about the availability of free hepatitis B vaccine for chronic dialysis patients, who were not mentioned explicitly among persons at higher risk of exposure to infection. In accordance with current interpretation, the patients with chronic kidney disease requiring dialysis are still subject to mandatory vaccinations (in other words free vaccinations) as “particularly exposed to infection due to contact with the person infected with hepatitis B, if previously unvaccinated”.

According to the data published in the bulletin “Vaccinations in Poland in 2012,” vaccination coverage of infants in second years of age (born in 2011) in relation to all recorded was 99.7%. Territorial differentiation of vaccination coverage, as in the previous year, was very low (99.6% -99.9%).

The highest proportion of unvaccinated persons out of the risk groups subject to mandatory vaccinations was among household contacts of persons infected HBV (infected until 2012) - 31.7%, which could be overestimated because the percentage of unvaccinated

persons in group of contacts of infected HBV identified in 2012 was 12,4% only.

Vaccine adverse events (VAE) associated with hepatitis B vaccines (second-generation vaccine, recombinant), as in previous years, accounted for a very small proportion of all registered VAE in 2012. Overall, there were 11 local adverse events after hepatitis B vaccine (Engerix-B, Euvax-B, Hepavax-Gene) and 11 generalized VAE, including one case of anaphylactic shock. In 2012, there were no serious adverse events (ie. events which causes death or permanent damage) related to hepatitis B vaccines according to the classification adopted by NIPH-NIH.

SUMMARY AND CONCLUSIONS

The continuing downward trend in the incidence of acute hepatitis B in the unvaccinated population may indicate an improvement in sanitary condition of medical facilities and increase in safety of medical procedures. Most of new hepatitis B infections are still occurring in medical facilities due to percutaneous (IV, IM, SC, intradermal) and permucosal exposure during medical procedures. Therefore, measures taken to break the spread of hepatitis B infections in health care settings should be of particular importance. Simultaneously, the actions aimed at increasing the proportion of the population immunized through vaccination: maintaining routine vaccination of newborns and recommending vaccination for all persons previously unvaccinated should be continued. Further dissemination of information about the possible routes of hepatitis B infection, especially transmission through sexual contact is also

Table V. Chronic hepatitis B in Poland 2012. 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	%												
0 - 4	0	0.00	0.0	2	0.20	0.3	2	0.17	0.20	0	0.00	0.0	2	0.10	0.1
5 - 9	1	0.11	0.1	1	0.11	0.2	1	0.10	0.10	1	0.12	0.2	2	0.11	0.1
10 - 14	3	0.31	0.3	1	0.11	0.2	1	0.10	0.10	3	0.34	0.6	4	0.21	0.3
15 - 19	84	7.25	9.5	37	3.34	6.0	70	5.78	7.00	51	4.84	10.2	121	5.34	8.0
20 - 24	104	7.46	11.7	79	5.89	12.8	106	6.74	10.50	77	6.62	15.5	183	6.69	12.2
25 - 29	106	6.53	11.9	91	5.78	14.7	128	6.50	12.70	69	5.62	13.9	197	6.16	13.1
30 - 34	84	5.24	9.5	88	5.65	14.3	119	5.97	11.80	53	4.53	10.6	172	5.44	11.4
35 - 39	117	7.96	13.2	68	4.75	11.0	131	7.35	13.00	54	4.81	10.8	185	6.37	12.3
40 - 44	109	8.85	12.3	65	5.37	10.5	109	7.58	10.80	65	6.49	13.1	174	7.13	11.6
45 - 49	93	7.77	10.5	46	3.86	7.5	91	6.47	9.00	48	4.88	9.6	139	5.82	9.2
50 - 54	59	4.31	6.6	49	3.46	7.9	80	4.66	7.90	28	2.63	5.6	108	3.88	7.2
55 - 59	49	3.49	5.5	32	2.10	5.2	65	3.39	6.50	16	1.58	3.2	81	2.77	5.4
60 - 64	25	2.15	2.8	22	1.63	3.6	36	2.15	3.60	11	1.31	2.2	47	1.87	3.1
65 - 74	33	2.74	3.7	18	1.10	2.9	35	1.88	3.50	16	1.63	3.2	51	1.79	3.4
75 +	21	2.47	2.4	18	1.05	2.9	33	2.10	3.30	6	0.61	1.2	39	1.52	2.6
Total	888	4.76	100.0	617	3.10	100.0	1 007	4.31	100.0	498	3.28	100.0	1 505	3.91	100.0

Source: Infectious diseases and poisonings in Poland. NIPH-NIH, CSI. Warsaw, 2013

important. The current, relatively stable situation of chronic hepatitis B is largely a consequence of hepatitis B epidemic in the early 90s before the introduction of universal vaccination of infants and persons at high risk. The achievement of improvement in chronic hepatitis B situation depends mainly on the efficiency of detection of asymptomatic infections and accessibility of optimal treatment leading to suppression of virus replication. In order to obtain comparable epidemiological data at the national level and a better understanding of the situation in subpopulations it is necessary to strengthen the surveillance of chronic hepatitis B.

Received: April 16th, 2014

Accepted for publication: April 23rd, 2014

Address for correspondence:

Małgorzata Stępień
 Department of Epidemiology
 National Institute of Public Health
 - National Institute of Hygiene
 24 Chocimska Street, 00-791 Warsaw
 tel. (022) 5421-248
 e-mail: mstepien@pzh.gov.pl

