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HEPATITIS B IN POLAND IN 2011

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ABSTRACT

OBJECTIVES. Evaluation of the epidemiological situation of hepatitis B in Poland in 2011 in comparison with previous years.
MATERIALS AND METHODS. Evaluation of occurrence of hepatitis B in Poland, registered in 2011, based on the results of the analysis of case-based data for acute hepatitis B sent to the NIPH-NIH by the State Sanitary Inspection and on aggregate data from annual bulletin "Infectious diseases and poisonings in Poland".
RESULTS. A total of 1,583 hepatitis B cases, including 30 cases of co-infection with hepatitis C (HCV) was reported in 2011. Incidence was 4.11 per 100,000 population and was lower by 4% compared to the previous year. Acute cases constituted 6.6% of all hepatitis B cases, the incidence - 0.27 per 100,000 population. The highest incidence of acute hepatitis B recorded in Podlaskie (1.00 per 100,000 population) and that of chronic in Opolskie (10.83 per 100,000). Overall, hepatitis B occurred more often in males than females and those residing in urban areas.
Chronic hepatitis B was most frequently detected (as in previous years) in people aged 15-19, most rarely in those aged 0-14 entirely covered by universal HBV vaccination of infants. The highest incidence of acute hepatitis B was observed among people aged 30-34 (0.64 per 100,000) and among those aged 65-74 (0.58 per 100,000). Predominant route of infection hepatitis B in Poland were medical procedures (in 55% of all acute cases).
Among young people (aged 25-34) have been observed increasing share of infections acquired through sexual contact or intravenous drug use (28% of acute cases), among elderly people nonmedical routes of infection constituted only 7% and mostly it was the contact with infected household member.
In 2011, eight people died because of acute hepatitis B and 40 due to chronic hepatitis B.
CONCLUSIONS. Observed steady downward trend in incidence of acute hepatitis B indicates persistent effectiveness of the universal HBV vaccination program. In view of growing share of acute cases acquired by sexual transmission or drug use it is reasonable to recommend vaccinations to unvaccinated at-risk people especially those exposed to HBV infection due to lifestyle.

Key words: *hepatitis B, infectious diseases, epidemiology, public health, immunization, Poland, 2011*

The objective of this study was to assess epidemiological situation of hepatitis B in Poland in 2011 compared with previous years.

MATERIAL AND METHODS

Assessment of the epidemiological situation hepatitis B in 2011 in Poland was based on descriptive analysis of data published in the bulletins "Infectious diseases and poisonings in Poland in 2011" and "Vaccinations in Poland in 2011" (Warsaw 2012, NIZP-PZH , GIS) and for acute cases based on the analysis of data contained in the case-based reports collected through routine mandatory surveillance system. Were also used data on deaths due to hepatitis B in 2011, provided by the Department for Demographic Research CSO. Hepatitis B cases are reported to the State Sanitary Inspectorate under existing legislation (Law on Prevention and Control of Infections and Infectious Diseases in Humans of December 5, 2008), and registered in accordance with EU case definition (Commission Decision of 28 April 2008 amending Decision 2002/253/EC laying down case definitions for reporting communicable diseases to the Community network under Decision No 2119/98/EC of the European Parliament and of the Council).

In 2011 was used case definition for acute hepatitis B implemented in Poland in 2009.

Accordance with the EU definition as acute case was considered any person meeting the clinical criteria and having laboratory confirmation through detection of IgM antibodies for hepatitis B core antigen (IgM anti-HBc+). As a probable acute case considered to be any symptomatic case epidemiologically linked to a confirmed case of hepatitis B.

Chronic hepatitis B were recorded based on diagnosis of treating physician.

RESULTS AND DISCUSSION

A total of 1,583 hepatitis B cases, including 30 (1,9%) cases of co-infection with hepatitis C (HCV) was registered in 2011, incidence was 4.11 per 100,000 population. In comparison to 2010 (1633, 4.28) incidence decreased by 4% (Fig. 1), but did not to the level recorded in 2008 (3.51 per 100,000) - the lowest in the past 10 years. It may mean that observed in the previous two years a slight increase of incidence was temporary and reduced incidence achieved through universal HBV vaccination program remains relatively stable. Overall incidence of hepatitis B is determined mainly by chronic cases, in acute hepatitis B since the beginning of separate registration of acute and chronic hepatitis B persists a downward trend (Fig.2). As in the previous years a large territorial diversity was observed - in 8 provinces there was a decrease of incidence - the largest in Małopolskie by 41%, and in 8 increase - the highest in Podlaskie, where the overall incidence was more than 5 fold higher than in 2010. Differences of incidence in the country still deepen: the ratio of the highest incidence (in Opolskie 11.23 / 100,000 population) to the lowest (in Małopolskie 0.48 / 100,000) was as 23:1. In Opolskie, where the incidence for several years is among the highest in the country, observed the continuing upward trend in the incidence.

ACUTE HEPATITIS B

In 2011 in Poland 104 cases of acute hepatitis B were registered (incidence 0.27 per 100,000 population), acute cases accounted for 6.6% of the total number of registered hepatitis B cases (Tab.I, Tab.II). There is a further decrease in the number of acute cases - by 21% compared to 2010, decreased also the proportion of reports of acute hepatitis B without laboratory confirmation (6% compared with 15% in 2010), which shows some improvement the quality of surveillance. 83% of all registered acute cases met the criteria for confirmed case. Decrease in incidence was reported in 10 provinces (the largest in Podkarpackie - by 85% compared to 2010), in one province the incidence has not changed (świętokrzyskie: 0.08 / 100,000 population) and in 5 provinces there was an increase (the largest, more than 8-fold , in Pomorskie). In all provinces acute cases

Table I. Hepatitis B (total) in Poland 2005-2011. Number of cases and incidence per 100,000 population. percentage of acute and chronic caces. number and percentage of HBV/HCV coinfections by province

Province		Median 2005-2009		2010		2011					
						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	1 633	4.28	1 583	4.11	6.6	93.4	30	1.9
1.	Dolnośląskie	164	5.70	114	3.96	122	4.18	5.7	94.3	2	1.6
2.	Kujawsko-pomorskie	126	6.09	113	5.46	89	4.24	3.4	96.6	0	0.0
3.	Lubelskie	106	4.90	69	3.20	60	2.76	6.7	93.3	1	1.7
4.	Lubuskie	17	1.69	31	3.07	37	3.62	8.1	91.9	1	2.7
5.	Łódzkie	189	7.32	185	7.29	197	7.76	6.1	93.9	4	2.0
6.	Małopolskie	49	1.50	27	0.82	16	0.48	43.8	56.3	0	0.0
7.	Mazowieckie	178	3.43	282	5.39	233	4.42	11.2	88.8	9	3.9
8.	Opolskie	60	5.77	122	11.85	114	11.23	3.5	96.5	0	0.0
9.	Podkarpackie	45	2.14	67	3.19	62	2.91	1.6	98.4	1	1.6
10.	Podlaskie	21	1.76	13	1.09	76	6.32	15.8	84.2	1	1.3
11.	Pomorskie	67	3.04	63	2.82	72	3.16	11.1	88.9	2	2.8
12.	Śląskie	185	3.98	134	2.89	124	2.68	6.5	93.5	2	1.6
13.	Świętokrzyskie	71	5.57	48	3.78	71	5.55	1.4	98.6	3	4.2
14.	Warmińsko-mazurskie	16	1.12	11	0.77	12	0.83	25.0	75.0	2	16.7
15.	Wielkopolskie	175	5.19	324	9.49	263	7.62	1.1	98.9	2	0.8
16.	Zachodniopomorskie	31	1.83	30	1.77	35	2.03	5.7	94.3	0	0.0

Source: Infectious diseases and poisonings in Poland. NIZP-PZH. GIS. Warsaw. Annals 2005-2011

Table II. Acute hepatitis B in Poland 2005-2011. Number of cases and incidence per 100,000 population by province

	Province	Median 2005-2009		2010		2011	
		Number of cases	Incidence	Number of cases	Incidence	Number of cases	Incidence
	POLAND	364	0.95	128	0.34	104	0.27
1.	Dolnośląskie	18	0.63	8	0.28	7	0.24
2.	Kujawsko-pomorskie	17	0.82	5	0.24	3	0.14
3.	Lubelskie	18	0.83	5	0.23	4	0.18
4.	Lubuskie	6	0.59	3	0.30	3	0.29
5.	Łódzkie	21	0.82	11	0.43	12	0.47
6.	Małopolskie	38	1.16	21	0.64	7	0.21
7.	Mazowieckie	65	1.26	26	0.50	26	0.49
8.	Opolskie	13	1.25	3	0.29	4	0.39
9.	Podkarpackie	15	0.72	7	0.33	1	0.05
10.	Podlaskie	18	1.51	5	0.42	12	1.00
11.	Pomorskie	17	0.77	1	0.04	8	0.35
12.	Śląskie	68	1.46	13	0.28	8	0.17
13.	Świętokrzyskie	11	0.86	1	0.08	1	0.08
14.	Warmińsko-mazurskie	12	0.84	1	0.07	3	0.21
15.	Wielkopolskie	20	0.59	10	0.29	3	0.09
16.	Zachodniopomorskie	7	0.41	8	0.47	2	0.12

Source: Infectious diseases and poisonings in Poland. NIZP-PZH. GIS. Warsaw. Annals 2005-2011

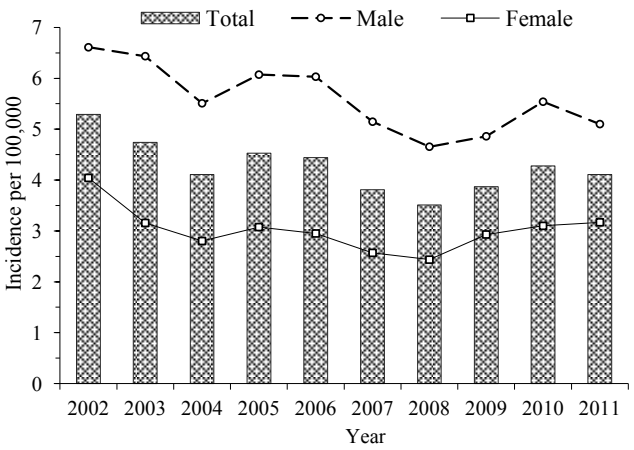

Fig. 1. Hepatitis B in Poland 2002-2011

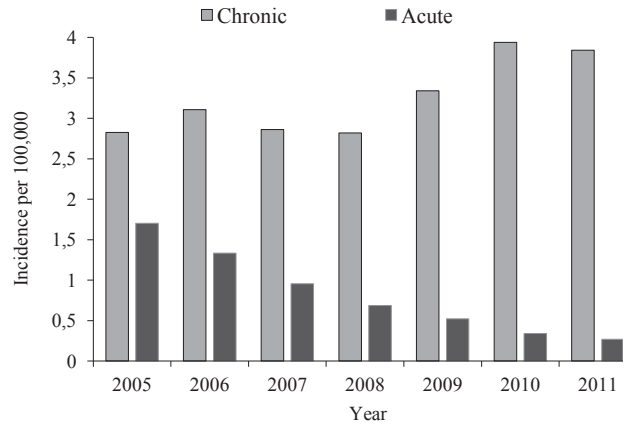

Fig. 2. Acute and chronic hepatitis B in Poland 2005-2011. Incidence per 100,000 population

constituted minority of all hepatitis B (Tab. I), even in Małopolskie, in which the dominance of acute cases lasted for longest time, there was a significant decrease (from 77% to 44% of the total). The lowest percentage share of acute cases registered in Wielkopolskie: 1.1% of all hepatitis B cases.

Diversity of incidence between the provinces has been deepening : from the highest in Podlaskie 1.00/100,000 population to the lowest in Podkarpackie 0.05 / 100,000, but the downward trend can be seen in all provinces.

In 2011, all patients were hospitalized except one in Warmińsko-Mazurskie and total hospitalization rate was 99%. Similarly as in preceding years more frequently men (more than double) and those living in cities were ill (Tab.IV), while the peak incidence in age groups moved to the older groups compared with the previous year (25 -29 years to 30-34 years). High incidence was also observed among people aged 65-74 (0.58 / 100,000). Highest incidence among males living in rural areas has been in the age group 65-74 (1.44 / 100,000), while in the cities most often were ill men aged 30-34 (1.11 / 100,000).

The highest incidence of women was observed among rural residents aged over 74 (0.77 / 100,000), among women living in the cities the incidence in this age group was lowest (0.10 / 100,000). The lowest incidence was in total in the age group 0-24 years, in whole covered by mandatory vaccination (of infants or at the age of 14 years) (Fig. 3 and 4). In this age group acute hepatitis B occurred in three persons: 8-year-old boy of Bulgarian nationality (probably vaccinated, interview uncertain) and two men aged 20 and 21 years: one of them received two doses of vaccine, the second was unvaccinated. Information on vaccination against hepatitis B were obtained in total from 91 (88%) patients: in this group 15 people (16%) were previously vaccinated, including 8 (9%) received a full primary course of vaccination, 6 people were partly vaccinated (2 doses), in one case number of doses of vaccine was unknown (no documentation of vaccination, the parents of ill child did not speak Polish).

Based on the data included in individual reports analyzed the likely routes of transmission. The dominant presumed route of infection, as in previous years, there were medical procedures (57 cases, 55% of all acute

cases), including 5 infections occurred through dialysis or blood transfusion. In 7 (6.7%) cases, the infection was probably acquired through sexual contact (most of them were young men, 20-36 years, having hetero-or homosexual contacts) 7 (6.7%) cases occurred probably through injecting drug use, in the next 7 through contact with household member infected HBV, and in 25% of all cases route of transmission remained unknown.

In 2011, according to preliminary data of Central Statistical Office 8 people died because of acute hepatitis B - increased by three compared to 2010. In previous years, a downward trend in number of deaths was observed parallel to reduce the incidence, noted in 2011 growth requires careful observation of number of deaths in subsequent years.

CHRONIC HEPATITIS B

In 2011, the number of reported cases of chronic hepatitis B was 1479 (incidence 3.84 per 100,000 population) and was by 3% lower than in the preceding year. That can mean settlement the annual number of detected chronic cases relatively stable and stopping growth in the number of cases of chronic hepatitis B observed in the two previous years. Chronic hepatitis B accounted for 93.4% of all reported cases of hepatitis B - that is a slight increase of the share of chronic forms in total number as compared with 2010, mainly due to further reduction in the incidence of acute hepatitis B.

In 2011, as in previous years, the registration of chronic hepatitis B based solely on a medical diagnosis set out in a notification without specifying particular criteria for chronic cases. No case definition, the possibility of re-reporting diagnosed earlier cases and different approaches to such cases by routine surveillance in regions require the caution in interpreting the data and indicate the need to improvement of surveillance for chronic hepatitis B.

It maintains a very wide variations in the incidence of chronic hepatitis B in the country: the highest incidence was recorded in Opolskie (10.83 per 100,000 population) and the lowest in Malopolskie (0.27 per 100,000), (Table III) (in the last year the highest and lowest incidence was in the same provinces). In comparison with the previous year incidence increased in 9 regions and fell in seven, the largest increase, almost 8-fold was recorded in Podlaskie, declines in any region did not exceed 20%.

Overall 56.5% of patients with chronic hepatitis B were hospitalized, the lowest rate of hospitalizations was recorded in Mazowieckie (20.3%), while in Podkarpackie, Podlaskie and Kujawsko-Pomorskie more than 90% of patients were hospitalized.

Table III. Chronic hepatitis B in Poland 2005-2011. Number of cases and incidence per 100,000 population by province

	Province	Median 2005-2009		2010		2011	
		Number of cases	Incidence	Number of cases	Incidence	Number of cases	Incidence
	POLAND	1090	2.86	1 505	3.94	1 479	3.84
1.	Dolnośląskie	151	5.2	106	3.68	115	3.94
2.	Kujawsko-pomorskie	97	4.7	108	5.22	86	4.10
3.	Lubelskie	89	4.1	64	2.97	56	2.57
4.	Lubuskie	9	0.9	28	2.77	34	3.32
5.	Łódzkie	165	6.4	174	6.85	185	7.29
6.	Małopolskie	11	0.3	6	0.18	9	0.27
7.	Mazowieckie	107	2.1	256	4.89	207	3.92
8.	Opolskie	47	4.5	119	11.55	110	10.83
9.	Podkarpackie	39	1.9	60	2.85	61	2.87
10.	Podlaskie	6	0.5	8	0.67	64	5.32
11.	Pomorskie	50	2.3	62	2.77	64	2.81
12.	Śląskie	125	2.7	121	2.61	116	2.51
13.	Świętokrzyskie	63	4.9	47	3.71	70	5.47
14.	Warmińsko-mazurskie	7	0.5	10	0.70	9	0.62
15.	Wielkopolskie	139	4.1	314	9.20	260	7.54
16.	Zachodniopomorskie	23	1.4	22	1.30	33	1.92

Source: Infectious diseases and poisonings in Poland. NIZP-PZH, GIS. Warsaw. Annals 2005-2011

The incidence in male was higher than in women (respectively 4.73 and 3 per 100,000 population), with the highest predominance of men, nearly 4-fold, in the people aged 75 +. Similarly, in urban areas the incidence was higher than in rural (4.36 and 3.03 per 100,000) with the highest, more than twice advantage the incidence in urban in people aged 40-49 (Table V). Among children it was slightly predominance of incidence in villages, also in the age group 15-19 years with highest incidence in the general population since 2006 (respectively 8.45 and 7.18 per 100,000) (Fig. 3). The incidence in the age group 15-19 decreased insignificantly compared to the prior year and in line with previous expectations it should be a further gradual decline in subsequent years along with entering into this group children vaccinated as infants. Among age groups not covered by mandatory vaccinations low incidence was observed in people aged above 60 . According to preliminary data of Central Statistical Office 40 people died due to chronic hepatitis B in 2011 (83% of deaths due to hepatitis B), but this number may be incomplete.

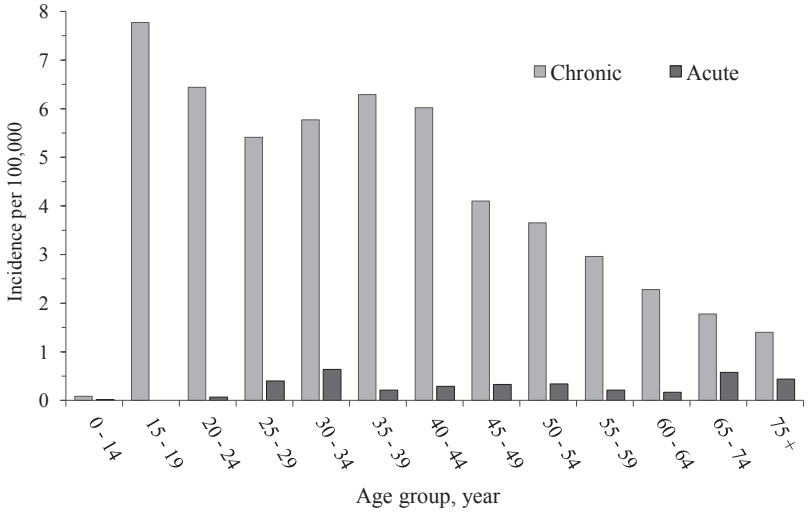

Fig. 3. Acute and chronic hepatitis B in Poland in 2011. Incidence per 100,000 population by age

VACCINATIONS AGAINST HEPATITIS B

According to the universal vaccination programme in force in 2011, the mandatory vaccinations against hepatitis B covered infants, adolescent at 14 years who were not previously vaccinated and people at-risk of HBV infection, particularly: health care workers, medical school students, household members or close contacts of persons HBsAg+ or hepatitis B patients (if previously unvaccinated), patients with chronic renal failure (especially prior to haemodialysis), HCV or HIV infected persons, children with congenital or acquired immune defect and those prepared for surgery with cardiopulmonary bypass (CPB).

Continue to have effect 3-dose vaccination schedule: 0, 1, 6 months, in healthy individuals was not provided boosters.

According to data published in bulletin "Vaccinations in Poland in 2011" vaccination coverage of infants in second years of age (born in 2010), in relation to all recorded was 99.7%. Territorial differentiation of coverage was very little - the lowest percentage of vaccinated 2-year children was recorded in Zachodniopomorskie 99.4%.

Table IV. Acute hepatitis B in Poland 2011. 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					
	No. of cases	Incidence	%	No. of cases	Incidence	%	No. of cases	Incidence	%	No. of cases	Incidence	%	No. of cases	Incidence	%
0 - 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
5 - 9	1	0.11	1.4	-	-	-	1	0.10	1.4	-	-	-	1	0.06	1.0
10 - 14	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
15 - 19	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
20 - 24	2	0.14	2.9	-	-	-	2	0.12	2.9	-	-	-	2	0.07	1.9
25 - 29	11	0.67	15.7	2	0.12	5.9	10	0.50	14.3	3	0.24	8.8	13	0.40	12.5
30 - 34	16	1.01	22.9	4	0.26	11.8	14	0.71	20.0	6	0.52	17.6	20	0.64	19.2
35 - 39	4	0.28	5.7	2	0.14	5.9	5	0.29	7.1	1	0.09	2.9	6	0.21	5.8
40 - 44	3	0.25	4.3	4	0.34	11.8	6	0.43	8.6	1	0.10	2.9	7	0.29	6.7
45 - 49	4	0.33	5.7	4	0.33	11.8	6	0.41	8.6	2	0.20	5.9	8	0.33	7.7
50 - 54	6	0.42	8.6	4	0.27	11.8	6	0.33	8.6	4	0.37	11.8	10	0.34	9.6
55 - 59	3	0.22	4.3	3	0.20	8.8	6	0.31	8.6	-	-	-	6	0.21	5.8
60 - 64	4	0.36	5.7	-	-	-	3	0.19	4.3	1	0.13	2.9	4	0.17	3.8
65 - 74	11	0.95	15.7	5	0.31	14.7	7	0.39	10.0	9	0.94	26.5	16	0.58	15.4
75 +	5	0.60	7.1	6	0.36	17.6	4	0.26	5.7	7	0.72	20.6	11	0.44	10.6
Total	70	0.38	100.0	34	0.17	100.0	70	0.30	100.0	34	0.22	100.0	104	0.27	100.0

Source: Infectious diseases and poisonings in Poland. NIZP-PZH. GIS. Warsaw. 2012

Table V. Chronic hepatitis B in Poland 2011. 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	2	0.19	0.2	-	-	-	1	0.08	0.1	1	0.11	0.2	2	0.10	0.1
5 - 9	-	-	-	2	0.23	0.3	1	0.10	0.1	1	0.12	0.2	2	0.11	0.1
10 - 14	1	0.10	0.1	-	-	-	-	-	-	1	0.11	0.2	1	0.05	0.1
15 - 19	119	9.83	13.5	65	5.61	10.9	92	7.18	9.0	92	8.45	20.1	184	7.77	12.4
20 - 24	104	7.26	11.8	77	5.58	12.9	111	6.75	10.9	70	5.99	15.3	181	6.44	12.2
25 - 29	98	5.94	11.1	78	4.86	13.1	115	5.70	11.3	61	4.93	13.3	176	5.41	11.9
30 - 34	106	6.67	12.0	75	4.85	12.6	136	6.87	13.3	45	3.89	9.8	181	5.77	12.2
35 - 39	99	6.95	11.2	78	5.62	13.1	129	7.51	12.6	48	4.38	10.5	177	6.29	12.0
40 - 44	88	7.29	10.0	56	4.72	9.4	111	7.88	10.9	33	3.35	7.2	144	6.02	9.7
45 - 49	60	4.91	6.8	40	3.28	6.7	77	5.32	7.5	23	2.32	5.0	100	4.10	6.8
50 - 54	62	4.35	7.0	44	2.98	7.4	80	4.40	7.8	26	2.40	5.7	106	3.65	7.2
55 - 59	59	4.24	6.7	27	1.78	4.5	67	3.50	6.6	19	1.92	4.1	86	2.96	5.8
60 - 64	30	2.69	3.4	25	1.93	4.2	41	2.54	4.0	14	1.76	3.1	55	2.28	3.7
65 - 74	32	2.76	3.6	17	1.07	2.9	35	1.96	3.4	14	1.45	3.1	49	1.78	3.3
75 +	23	2.77	2.6	12	0.72	2.0	25	1.64	2.4	10	1.02	2.2	35	1.40	2.4
Total	883	4.73	100.0	596	3.00	100.0	1 021	4.36	100.0	458	3.03	100.0	1 479	3.84	100.0

Source: Infectious diseases and poisonings in Poland. NIZP-PZH, GIS. Warsaw, 2012

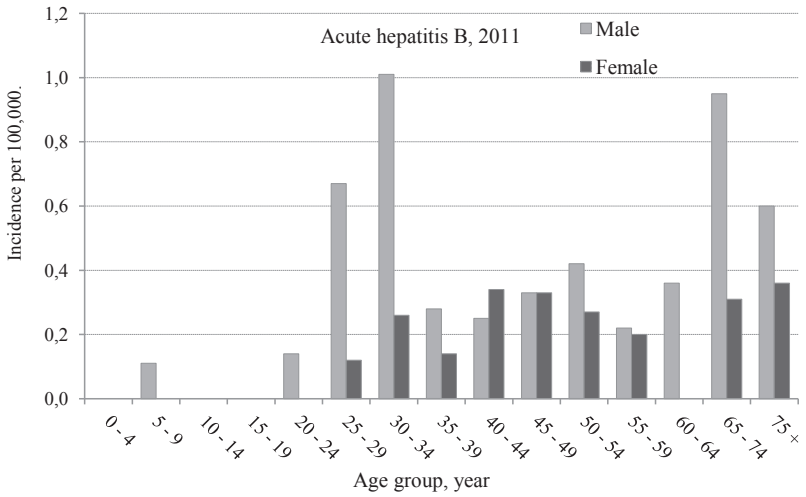

Fig. 4. Acute hepatitis B in Poland in 2011. Incidence per 100,000 population by age and gender.

The highest rates of unvaccinated people among at-risk persons under mandatory vaccinations have been observed among household contacts of HBV infected persons (32.9%).

Vaccine adverse events (VAE) associated with vaccines against hepatitis B (second-generation vaccine, recombinant) accounted for a small part of all registered vaccine adverse events in 2011. In total, there were 8 local, mild adverse effects after vaccines against hepatitis B (Engerix-B, Euvax-B, Hepavax-Gene) and 20 generalized VAE.

After vaccines against hepatitis B most frequently have been reported local swelling with redness at the injection site, fever, allergic reactions and in one case hypotonic-hyporesponsive episode (HHE). In 2011, there were no serious adverse events related to hepatitis B vaccines, by classification adopted by NIPH-NIH.

SUMMARY AND CONCLUSIONS

The downward trend observed in acute hepatitis B since the beginning of the separate registration of acute and chronic cases has been retained. This is mainly result of universal vaccination program. The highest incidence of acute hepatitis B was noted in young (30-34 years) males living in cities and in older males (over 65 years of age) living in rural areas. Results of analysis indicate the dependence of mode of transmission on place of residence and lifestyle. Observed increased

share of cases contracted through sexual contacts and injecting drug use in young people, while in elderly ones continue to predominate infections associated with medical procedures. Increase in number of cases acquired through non-medical exposure means shift mode of transmission HBV closer to the pattern observed in industrialized countries, where the infection through sexual transmission constitute 30-50% of all new infections. The primary prevention method of new HBV infections is still recommending hepatitis B vaccine and dissemination of knowledge about the possible transmission of infection, especially among people who are particularly at risk due to lifestyle.

Epidemiological situation of chronic hepatitis B, often asymptomatic, is much more difficult to interpret because of the high dependence the number of detected cases (acquired in the past) on the frequency of testing (screening among pregnant women and blood donors) and on differences in routine surveillance in different parts of the country. In order to obtain reliable and comparable data on chronic hepatitis B, it is necessary to improve surveillance activities and to update data on the prevalence of chronic hepatitis B in the general population and subpopulations.

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