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MEASLES IN POLAND IN 2012

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ABSTRACT

BACKGROUND. In 1998 Poland, along with all other Member States in the WHO European Region, implemented Measles Elimination Program coordinated by WHO. It requires achieving and maintaining very high vaccine coverage (>95%), recording all cases and suspected cases of measles, and laboratory testing of all suspected measles cases in the WHO Reference Laboratory. In Poland it is a Laboratory of Department of Virology, NIPH-NIH.

AIM. To assess epidemiological situation of measles in Poland in 2012, including vaccination coverage in Polish population, and Measles Elimination Program implementation status.

METHODS. The descriptive analysis was based on data retrieved from routine mandatory surveillance system and published in the annual bulletins “Infectious diseases and poisonings in Poland in 2012” and “Vaccinations in Poland in 2012”, and measles case-based reports from 2012 sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations.

RESULTS. In total, there were 70 measles cases registered in Poland in 2012 (incidence 0.18 per 100,000). The highest incidence rate was observed among infants (2.08 per 100,000) and children aged 1 year (2.47 per 100,000). In 2012, 37 cases (52,9%) were hospitalized due to measles. No deaths from measles were reported. Vaccination coverage of children and youth aged 2-11 years ranged from 83.6% do 99.6% (primary vaccination in children born in 2011-2006) and from 76.6% do 96.7% (booster dose in children born in 2003-2001). Performance of the surveillance system was insufficient with only 127 measles-compatible cases reported in 2012 (33% of expected reports). Fifty cases (71%) were confirmed by IgM ELISA test.

SUMMARY AND CONCLUSIONS. The epidemiological situation of measles deteriorated in 2012 in comparison to preceding year. The results indicate a need to further promote Measles Elimination Program in Poland, maintain the high immunisation coverage and improve measles surveillance system.

Keywords: *measles, infectious diseases, epidemiology, Poland, 2012*

INTRODUCTION

Since 1998, Poland has been actively participating in the Measles Elimination Program, coordinated by the World Health Organization (WHO). In May 2012, the World Health Assembly adopted a declaration on elimination of the disease by end of 2020 in at least five out of six WHO regions. The program requires recording and investigating all cases and suspected cases of measles, and laboratory testing (either serology or virus isolation) of all suspected measles cases in the WHO Reference Laboratory (Laboratory of Department of Virology, NIPH-NIH). Laboratory testing of all suspected cases of measles demonstrates high sensitivity of surveillance, and genetic characterization of wild-type strains of measles virus allows identification of the

source of infection and differentiation between native and imported cases.

The aim of the study was to assess epidemiological situation of measles in Poland in 2012, including vaccination coverage in Polish population, and Measles Elimination Program implementation status based on WHO surveillance sensitivity indicators.

MATERIAL AND METHODS

The descriptive analysis of epidemiological situation of measles was based on data retrieved from routine mandatory surveillance system and published in the annual bulletin “Infectious diseases and poisonings in Poland in 2012”, and measles case-based reports from 2012

sent to the Department of Epidemiology NIPH-NIH by Sanitary-Epidemiological Stations. Vaccination coverage was assessed based on data published in the annual bulletin "Vaccinations in Poland in 2012".

Measles cases were classified according to the criteria of surveillance case definition implemented in the European Union (Commission Decision of 28 April 2008 amending Decision 2002/253/EC). Measles cases were categorized into confirmed, probable and possible cases.

RESULTS

Epidemiological situation of measles in 2012. In 2012, a total of 70 measles cases (incidence 0.18 per 100,000) were registered in Poland, i.e. almost two times more than in 2011. Fifty cases (71.4%) were laboratory confirmed, whereas in 10 cases (14.3%) the diagnosis was based only on clinical symptoms. Ten cases that met the clinical criteria for measles and were epidemiologically linked to cases with laboratory-confirmed measles have been classified as probable cases.

Measles cases were registered in 10 out of 16 voivodeships (Tab. I). The highest number of cases occurred in slaskie voivodeship (22 cases, incidence 0.48 per 100,000) and mazowieckie voivodeship (21 cases, incidence 0.40 per 100,000). In the voivodeships, where measles cases were registered, the incidence did not exceed the threshold of measles elimination specified by the WHO as one case per 1,000,000 inhabitants.

In 2012, six measles outbreaks were reported in three voivodeships (1 in dolnoslaskie voivodeship, 2 in mazowieckie and 3 in slaskie), involving in total 42 individuals. One outbreak registered in dolnoslaskie voivodeship occurred among people of Romanian origin. Three imported measles cases were recorded in 2012 (from France, Ukraine and United Kingdom). They were not linked to any of the observed in 2012 outbreaks.

The highest incidence rate was observed among children under 5 years of age (1.02 per 100,000), especially infants (2.08 per 100,000) and children aged 1 year (2.47 per 100,000). Based on data from individual reports of cases, of 70 measles cases registered in 2012, 39 patients (56%) were unvaccinated (including 6 children in first year of life, not subjected to mandatory vaccination), 4 patients (6%) vaccinated with 1 dose of measles vaccine and 8 patients (11%) vaccinated with ≥ 2 doses of the vaccine. For 19 cases (27%) vaccination status was unknown. In 2012, 37 of all registered measles cases (53%) were hospitalized. Complications occurred in 16 patients (23%), including 12 measles cases diagnosed with pneumonia. No deaths from measles were reported in 2012.

Vaccinations against measles in 2012. The existing scheme of vaccination against measles remained unchanged since 2005 and consists of primary dose for children at 13-14 months and booster dose at 10 years of age. Live attenuated combined vaccine against measles, mumps and rubella (MMR) is used. In 2012, Poland maintained a high vaccination coverage in children. As of 31st December 2012, vaccination coverage

Table I. Measles in Poland during 2006-2012. Number of suspected and confirmed cases and incidence per 100 000 population by voivodeship

Voivodeship	Median 2006 - 2010				2011				2012			
	suspected cases		confirmed cases		suspected cases		confirmed cases		suspected cases		confirmed cases	
	number	incidence per 100 000	number	incidence per 100 000	number	incidence per 100 000	number	incidence per 100 000	number	incidence per 100 000	number	incidence per 100 000
POLAND	152	0.4	100	0.26	63	0.16	38	0.1	127	0.33	70	0.18
1. Dolnośląskie	11	0.38	7	0.225	-	-	-	-	24	0.82	18	0.62
2. Kujawsko-pomorskie	6	0.265	1	0.05	6	0.29	3	0.14	6	0.29	1	0.05
3. Lubelskie	8	0.37	7	0.32	2	0.09	-	-	3	0.14	-	-
4. Lubuskie	2	0.2	1	0.1	1	0.1	-	-	1	0.1	-	-
5. Łódzkie	7	0.27	4	0.155	5	0.2	4	0.16	1	0.04	1	0.04
6. Małopolskie	17	0.52	3	0.075	12	0.36	12	0.36	7	0.21	3	0.09
7. Mazowieckie	28	0.54	23	0.44	18	0.34	10	0.19	30	0.57	21	0.4
8. Opolskie	8	0.77	3	0.29	2	0.2	1	0.1	1	0.1	-	-
9. Podkarpackie	15	0.715	18	0.86	5	0.23	3	0.14	3	0.14	1	0.05
10. Podlaskie	2	0.165	0	0	-	-	-	-	1	0.08	-	-
11. Pomorskie	5	0.23	1	0.05	1	0.04	-	-	7	0.31	1	0.04
12. Śląskie	12	0.26	8	0.17	5	0.11	2	0.04	30	0.65	22	0.48
13. Świętokrzyskie	1	0.08	0	0	1	0.08	1	0.08	0	0	-	-
14. Warmińsko-mazurskie	1	0.07	0	0	1	0.07	1	0.07	0	0	-	-
15. Wielkopolskie	17	0.5	11	0.32	3	0.09	-	-	11	0.32	1	0.03
16. Zachodniopomorskie	4	0.21	3	0.18	1	0.06	1	0.06	2	0.12	1	0.06

Table II. Number and percentage of children vaccinated against measles in Poland 2009-2012 according to birth year (primary and booster vaccinations)*

Year of birth	As of 31th December 2009		As of 31th December 2010		As of 31th December 2011		As of 31th December 2012	
	number	% of children vaccinated						
Primary dose								
2006	362 139	99.0	379 510	99.4	361 648	99.5	361 874	99.6
2007	375 221	98.3	402 018	99.0	379 510	99.4	377 818	99.5
2008	342 111	84.3	400 927	98.1	402 018	99.0	403 615	99.3
2009	x	x	340 509	84.4	400 927	98.1	404 820	98.9
2010	x	x	x	x	340 509	84.4	395 336	97.9
2011	x	x	x	x	x	x	318 126	83.6
Booster dose								
2001	7 368	2.1	278 437	79.2	333 289	94.9	338 718	96.7
2002	4 294	1.3	6192	1.8	274 437	81.2	319 971	94.7
2003	x	x	1 904	0.6	x	x	255 409	76.6
2004	x	x	x	x	x	x	x	x

* vaccination against measles, rubella and mumps - MMR (based on "Vaccinations in Poland in 2012", NIPH-NIH, Warsaw 2013)

in children and youth aged 2-11 years ranged from 83.6% do 99.6% (primary vaccination in children born in 2011-2006) and from 76.6% do 96.7% (booster dose in children born in 2003-2001) (Tab. II). As in previous years, differences between voivodeships in performance of primary vaccination in children at 13-15 months of age were observed. Percentage of children born in 2011 vaccinated with trivalent vaccine against measles, mumps and rubella (83.6% in Poland) ranged from 77.6% in mazowieckie voivodeship to 97.3% in warminsko-mazurskie voivodeship.

Measles Elimination Program implementation status in 2012. WHO European Region measles elimination strategy requires maintaining a sensitive and timely surveillance of measles and measles-compatible cases, with serologic testing of one suspect case per 100,000 population. Considering the number of people living in Poland, there is a need to perform laboratory diagnostics for at least 385 cases per year. Over time, a decrease

in number of confirmed measles cases should be accompanied by an increase in the number of notified and laboratory tested suspected cases of measles. In Poland in 2012, the number of reported suspected measles cases was higher than in 2011, but, as in previous years, still insufficient. In 2012, a total of 127 cases and suspected cases of measles were reported in Poland which constitutes 33% of the expected reports and shows a low sensitivity of surveillance system (Fig. 1).

Along with a reliable evidence of the elimination of indigenous measles, efficient detection of the disease imported from other countries is also important in measles elimination strategy. Therefore, the key activities should be investigating all suspected cases of measles, including secondary cases in outbreaks, and performing genotyping of measles virus. In 2012, surveillance of measles suspected cases in the country was uneven. No voivodeship registered sufficient number of suspected measles cases to meet or exceed the threshold of measles

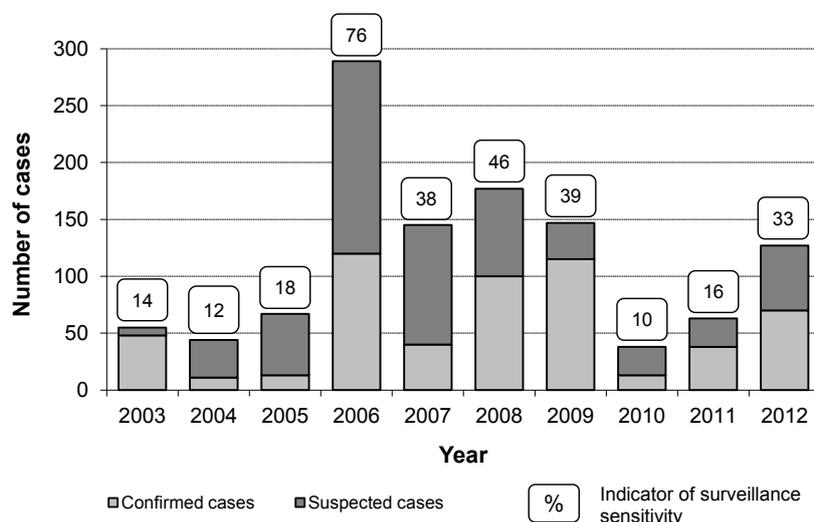


Fig 1. Measles surveillance performance in Poland 2003-2012

elimination specified by the WHO as one case per 1,000,000 inhabitants. The highest number of suspected cases was registered in Mazowieckie voivodeship (30 reports, incidence 0.57/100,000) and Śląskie voivodeship (30 reports, 0.65/100,000) (Tab. I). In two voivodeships (Świętokrzyskie and Warmińsko-mazurskie) none suspected measles cases were registered in 2012 which suggests not active participation in the WHO measles elimination program.

Number of serological tests performed in suspected measles cases in 2012 was insufficient. Of 127 recorded cases and suspected cases of measles, 84 (66.1%) were diagnosed with IgM ELISA test. In 72 of these cases (85.7%) the serological test was performed in the WHO Reference Laboratory in the Department of Virology NIPH – NIH, in 6 cases (7.1%) in laboratory of Voivodeship Sanitary Station and in 6 cases in a private laboratory.

According to the law on control of infections and infectious diseases in humans (Act of 5 December 2008 on prevention and control of infections and infectious diseases in humans, Dz.U.08.234.1570 with further amendments) measles is subjected to statutory notification by a doctor within 24 hours from the time of diagnosis or suspicion of infection. Despite the improvement in comparison to the previous year, the median number of days between the first visit to the doctor and notification of case or suspected measles case to the local sanitary-epidemiological stations was 4 days and therefore exceeded the applicable time.

To maintain high sensitivity of the serological diagnosis of measles, the specimen should be collected between 7 and 45 day after rash onset date. The highest titer is observed on 8 day. The median number of days between rash onset date and specimen collection date increased from 8 days in 2011 to 10 days in 2012. In 26 cases, the material was taken earlier than seven days from the onset of the rash. In one patient, the material was collected after 45 days.

SUMMARY AND CONCLUSIONS

The epidemiological situation of measles in 2012 deteriorated compared to the previous year. The incidence of measles almost doubled compared to 2011. Additionally, too low sensitivity of measles surveillance allows to doubt in the completeness of the reports.

Performance of serological tests in suspected measles cases is still too poor. The WHO measles elimination strategy requires confirmatory tests to be performed in laboratories with the necessary accreditations. At the moment, the only reference center in Poland is a laboratory of the Department of Virology NIPH-NIH. It has accreditations for testing under the program provided by the WHO and the Polish Centre for Accreditation. Referral of laboratory testing in accredited laboratory is free of charge.

In the current situation the most important element of the strategy of measles elimination in Poland, in addition to maintaining high vaccine coverage, is intensification of activities in regions with poor surveillance of cases and suspected cases of measles. In addition, it is necessary to intensify surveillance in areas inhabited by ethnic groups with a lower vaccination coverage, which may be a reservoir of the measles virus and a cause of virus circulation after its importation from abroad. Reaching out to minorities and carrying out vaccination campaigns among these groups is an essential part of the measles elimination program. An efficient epidemiological surveillance will allow tracking imported cases as a source of infection for under-vaccinated communities.

It is necessary to further promote measles elimination program among physicians, taking into account the dissemination of detailed information about the plan and implementation of the program, the current epidemiological situation of the disease and, above all, the need to document and laboratory confirm all cases and suspected cases of measles. Important elements of the strategy are also increasing awareness of the role of a Reference Laboratory in the implementation of the program and performance of free of charge laboratory testing.

Received: 5.03.2014

Accepted for publication: 12.03.2014

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