Maria Korzeniewska- Koseła

TUBERCULOSIS IN POLAND IN 2012

National Tuberculosis and Lung Diseases Research Institute
Department of Tuberculosis Epidemiology and Surveillance

ABSTRACT

AIM OF THE STUDY. To evaluate the main features of TB epidemiology in 2012 in Poland and to compare with the corresponding EU data.

METHODS. Analysis of case- based clinical and demographic data on TB patients from Central TB Register, of data submitted by laboratories on anti-TB drug susceptibility testing results in cases notified in 2012, data from National Institute of Public Health- National Institute of Hygiene on cases of tuberculosis as AIDS-defining disease, from Central Statistical Office on deaths from tuberculosis based on death certificates, data from ECDC report „Tuberculosis Surveillance in Europe, 2014 (situation in 2012).

RESULTS. 7 542 TB cases were reported in Poland in 2012. The incidence rate was 19.6 cases per 100 000, with large variability between voivodships from 10.6 to 30.2. The mean annual decrease of TB incidence in 2008 - 2012 was 2.4%. 6 665 cases had no history of previous treatment; 17.3 per 100 000. The number of all notified pulmonary tuberculosis cases was 7 018; 18.2 per 100 000. The proportion of extrapulmonary tuberculosis among all registered cases was 6.9% (524 cases). In 2012, 36 patients had fibrous-cavernous pulmonary tuberculosis (0.5% of all cases of pulmonary tuberculosis). TB was diagnosed in 95 children (1.3% of all cases, incidence 1.6). The incidence of tuberculosis increased progressively with age to 34.8 among patients 65 years old and older. The mean age of new TB cases was 53.1 years. The incidence among men (27.4) was more than two times higher than among women (12.2). The incidence rate in rural population was lower than in urban; 20.2 *vs*. 18.6. Bacteriologically confirmed pulmonary cases (4870) constituted 69,4% of all pulmonary TB cases. The number of smear positive pulmonary TB cases was 2 778 (39.6% of all pulmonary cases). In 2012 in the all group of TB patients in Poland there were 276 (3.7%) of homeless and 1 905 (25.3%) of unemployed. There were 48 foreigners registered among all cases of tuberculosis in Poland (0.6%) and 243 cases registered among prisoners (rate 288.0). There were 31 patients with MDR-TB (0.7% of 4659 cases with known anti-TB DST results). TB was initial AIDS indicative disease in 26 cases. There were 640 deaths due to tuberculosis in 2011 (1.7 TB deaths per 100 000). Mortality among males – 2.7 – was four times higher than among females – 0.7.

CONCLUSIONS. In Poland in 2012 the incidence of tuberculosis was higher than the average in EU countries. The highest incidence rates occurred in older age groups. The incidence in men was more than 2 times higher than in women. The incidence of tuberculosis in children and the percentage of patients with drug-resistant tuberculosis are lower than average in EU and that is favorable for epidemiological situation of tuberculosis in our country.

Key words: *tuberculosis, incidence, relapses, chronic forms of TB, TB confirmed by culture, TB in prisoners, TB in foreign origin, TB/HIV co-infection, social status of TB patients, anti-TB drug resistance, mortality, Poland, 2012*

Reporting on tuberculosis is in Poland mandatory and regulated by law. According to The Act on the prevention and control of infections and infectious diseases in humans of 5 December 2008 and the Act amending the above Act and Act on State Sanitary Inspection of 13 July 2012 doctors and feldshers should submit the form with data on the particular case of tuberculosis to the Poviat Sanitary-Epidemiological Station, the Border state-sanitary inspector, who is competent in respect for the place of diagnosis or to Voivodship Sanitary Inspector or other bodies competent with respect to type of infectious disease, infection, or death due to infectious disease. Forms are subsequently forwarded, on a quarterly basis, through Voivodship Sanitary-Epidemiological Station, to the National Tuberculosis and Lung Diseases Research Institute (Institute). The Institute, that was designated by Chief Sanitary Inspectorate as the body

competent in the field of tuberculosis, keeps The Central Tuberculosis Register (Register).

AIM OF THE STUDY

Assessment of the epidemiological situation of tuberculosis in Poland in 2012 by comparison with the countries of the European Union with regard to the TB incidence in different population groups (in various age groups, in men and women), to the participation of extrapulmonary TB, to the participation of bacteriologically confirmed cases, to the problem concerning the drug resistance, to tuberculosis in foreign-origin TB cases, in prisoners, in HIV infected subjects, to social status of patients and to TB mortality.

MATERIAL AND METHODS

Analysis of the data on TB cases reported in 2012 to the Register, on anti-TB drug susceptibility testing results (DST), on deaths from TB (data obtained from the Central Statistical Office), on cases in which tuberculosis was the AIDS defining illness (data provided by the National Institute of Public Health-National Institute of Hygiene) and analysis of the data from the report of the European Centre for Diseases Prevention and Control „Tuberculosis Surveillance in Europe, 2014 (situation in 2012).

TB drug susceptibility evaluation was made on the basis of records provided by all laboratories in Poland that perform anti-TB DST.

RESULTS

Incidence of tuberculosis. In 2012, 7542 cases of tuberculosis were reported in Poland. This was 936 cases less than in the previous year and 2582 cases less than in 2003. The incidence of all forms of tuberculosis in 2012 was 19.6 per 100 000 population (later in the text, the denominator in rates is skipped) and was lower by 11.7% as compared with 2011 and lower by 26.0% than a decade ago. The average annual decline in incidence in the years 2008-2012 was 2.4% and was lower compared to the previous five years 2003-2007 (3.7%) (Table I).

In 2012, as in previous years, considerable differences in the incidence of tuberculosis between the voivodships were observed. The highest incidence of tuberculosis was recorded in the voivodship lubelskie – rate 30.2, świętokrzyskie – 29.2 and łódzkie – 28.1. The lowest incidence of tuberculosis in the country was recorded in voivodship lubuskie – 10.6, wielkopolskie – 10.9 and zachodnio-pomorskie – 12.3. The slight increase of TB incidence in comparison with the previous year was noted in 2 voivodships: kujawsko-pomorskie and in warmińsko-mazurskie. In other 14 voivodships there was a decrease of TB incidence (Table II.).

Table I. Tuberculosis cases (all forms) and tuberculosis notification rates by age groups. Poland 2012. Rates per 100,000 population. Data from Central TB Register

Years	Total	0-14	15-19	20-44	45-64	65+	Total	0-14	15-19	20-44	45-64	65+
	Number of cases in age groups (years)						Rates					
	TB ALL FORMS											
1957	82201	16402	5757	37141	19255	3646	290.4	181.0	266.1	370.6	351.6	230.1
1965	57511	4553	3879	23914	18520	6645	182.6	46.6	134.1	221.6	314.5	309.6
1970	42142	1273	2861	18440	13001	6567	128.5	14.3	83.1	158.3	209.6	242.0
1975	26255	535	1695	11844	7753	4428	77.2	6.5	49.5	94.8	116.0	136.5
1980	25807	573	990	11358	8434	4452	72.5	6.6	35.7	84.7	117.9	123.8
1985	21650	314	621	9226	7678	3811	58.2	3.3	24.7	66.3	98.7	108.8
1990	16136	225	421	6682	5818	2990	42.3	2.3	14.8	46.6	77.3	78.0
1995	15959	205	363	6337	5577	3477	41.4	2.3	11.3	44.2	70.0	81.4
2000	11477	103	241	3978	4221	2934	29.7	1.4	7.2	28.0	47.2	62.4
2001	10672	124	199	3600	4052	2697	27.6	1.7	6.0	25.4	44.2	56.3
2002	10475	125	211	3203	4175	2761	27.4	1.8	6.4	23.1	44.8	56.8
2003	10124	100	184	3045	3968	2827	26.5	1.5	5.8	21.9	41.7	57.6
2004	9493	120	129	2836	3835	2573	24.9	1.9	4.2	20.3	39.5	51.7
2005	9269	99	156	2717	3760	2537	24.3	1.6	5.3	19.4	38.0	50.9
2006	8587	69	156	2529	3655	2178	22.5	1.1	5.5	18.0	36.4	42.8
2007	8614	74	135	2538	3762	2105	22.6	1.2	4.9	18.0	37.0	41.1
2008	8081	76	115	2248	3685	1957	21.2	1.3	4.3	15.9	35.8	38.1
2009	8236	99	131	2250	3704	2052	21.6	1.7	5.1	15.8	35.6	39.9
2010	7509	62	114	2086	3441	1806	19.7	1.1	4.6	14.6	32.8	34.9
2011	8478	111	130	2171	3895	2171	22.2	1.9	5.4	15.2	37.0	41.9
2012	7542	95	166	1996	3404	1881	19.6	1.6	7.3	13.8	32.1	34.8

6665 cases (88.4% of all patients) were the newly diagnosed and never treated cases (rate 17.3). 877 patients (11.6% of all cases, rate 2.3) had anti-TB treatment in the past (retreatment cases). 7018 cases (93.0% of the whole group of patients) were the cases of pulmonary tuberculosis; rate 18.2. Purely extrapulmonary tuberculosis affected 524 patients, 6.9% of all registered cases – rate 1.4.

The most common form of extrapulmonary tuberculosis (36.3%) was pleural TB (190 cases), peripheral lymph node TB (84), bone and joint TB (58 cases, including 23 with spinal manifestation), urogenital TB (57). 9 cases suffered from tuberculous meningitis and other central nervous system manifestation of TB. There were no children and one teenager among them.

In 2012, 36 patients had fibrous-cavernous pulmonary tuberculosis. Cases of tuberculosis fibro-cavernous accounted for 0.5% of all cases of pulmonary tuberculosis.

In 2012, as in earlier years, the incidence rates of TB was increasing with age, from 1.6 in children (0-14 years) up to 34.8 in subjects 65 years and older. The oldest patients (≥65 years) constituted 25.8% of all new cases. The mean age of new cases of tuberculosis was 53.1 years.

Tuberculosis in children accounted for 1.3% of the total number of cases (95 cases, 16 less than in 2011). The most common form of TB in children was tuberculosis of the intrathoracic lymph nodes (34 cases) and pulmonary tuberculosis (52 cases).

Culture confirmation was reported for 17 (32.7%) paediatric pulmonary TB cases and for 6 (14.0%) extrapulmonary cases.

The highest incidence rates of paediatric tuberculosis were recorded in voivodship mazowieckie – 5.0; lubelskie – 2.7 and śląskie – 2.3. One paediatric TB case was notified in each of these voivodships: lubuskie, opolskie, świętokrzyskie and warmińsko-mazurskie; in voivodship pomorskie there was no child with TB (Table III).

There were 166 cases of tuberculosis in the group of adolescents aged 15 to 19 years (rate 7.3). This was 36 cases more than in 2011 (rate 5.4 in 2011). In 95 cases (57.2% of all adolescents with TB) tuberculosis was bacteriologically confirmed (positive culture results of diagnostic materials). The highest incidence rate of tuberculosis in the age group from 15 to 19 years was in voivodship lubelskie-19.0. The youth from this voivodship had also the highest incidence of culture confirmed pulmonary tuberculosis (rate 11,7) and the highest incidence of sputum smear positive pulmonary tuberculosis (rate 5.8) (Table III).

In 2012, as in previous years, the males with TB were notified more than twice as often as women (2.2x). There were 5 109 cases registered in men – rate 27.4 and 2 433 cases in women – rate 12.2. Cases among men constituted 67.7% of the total cases. The biggest differences in incidence between males and females were observed in older age groups. Males between the ages 55-59 years had 3.7 times greater incidence rate of tuberculosis than women in the same age (56.1 vs. 15.3). The lowest incidence rate of tuberculosis in Poland was in women in wielkopolskie voivodship (7.1); the highest – in men in the voivodship lubelskie (41.1)(Table II).

4 716 cases of TB in urban areas (rate 20.2) and 2 826 cases among the rural population (rate 18.6) were registered. In the past in Poland the epidemiological

Table II. Tuberculosis cases (all forms) and tuberculosis notifications rates by gender and voivodships. Poland 2012. Rates per 100,000 population. Data from Central TB Register

Voivodships	Numbers					Rates				
	Total	Male	Female	Urban areas	Rural areas	Total	Male	Female	Urban areas	Rural areas
Poland	7542	5109	2433	4716	2826	19.6	27.4	12.2	20.2	18.6
Dolnośląskie	594	391	203	450	144	20.4	27.9	13.4	22.2	16.3
Kujawsko-pomorskie	399	289	110	265	134	19.0	28.4	10.2	20.9	16.1
Lubelskie	656	432	224	261	395	30.2	41.1	20.0	25.9	34.0
Lubuskie	108	68	40	67	41	10.6	13.6	7.6	10.3	10.9
Łódzkie	711	488	223	448	263	28.1	40.5	16.9	27.8	28.6
Małopolskie	523	345	178	256	267	15.6	21.2	10.3	15.6	15.6
Mazowieckie	1040	653	387	676	364	19.6	25.8	14.0	19.9	19.2
Opolskie	155	112	43	98	57	15.3	22.9	8.2	18.5	11.8
Podkarpackie	421	294	127	173	248	19.8	28.2	11.7	19.6	19.9
Podlaskie	160	100	60	84	76	13.3	17.1	9.8	11.6	16.0
Pomorskie	432	293	139	290	142	18.9	26.3	11.9	19.4	18.0
Śląskie	1185	884	301	990	195	25.6	39.6	12.6	27.6	18.9
Świętokrzyskie	374	240	134	162	212	29.3	38.5	20.5	28.2	30.2
Warmińsko-mazurskie	196	128	68	131	65	13.5	18.0	9.2	15.2	11.0
Wielkopolskie	377	251	126	225	152	10.9	14.9	7.1	11.7	9.9
Zachodnio-pomorskie	211	141	70	140	71	12.3	16.8	7.9	11.8	13.2

Table III. Tuberculosis cases (all forms) and tuberculosis notification rates by age groups and voivodships. Poland 2012. Rates per 100,000 population. Data from Central TB Register

Voivodships	Numbers						Rates					
	Total	0-14	15-19	20-44	45-64	65+	Total	0-14	15-19	20-44	45-64	65+
POLAND	7542	95	166	1996	3404	1881	19.6	1.6	7.3	13.8	32.1	34.8
Dolnośląskie	594	2	13	143	299	137	20.4	0.5	8.2	13.1	35.2	33.7
Kujawsko-pomorskie	399	5	6	122	181	85	19.0	1.6	4.6	15.6	31.0	30.6
Lubelskie	656	9	26	163	279	179	30.2	2.7	19.0	20.3	48.0	55.8
Lubuskie	108	1	3	30	46	28	10.6	0.6	4.9	7.8	15.7	22.0
Łódzkie	711	6	4	203	328	170	28.1	1.7	2.8	22.3	45.2	42.7
Małopolskie	523	5	10	121	216	171	15.6	0.9	4.8	9.4	25.1	36.6
Mazowieckie	1040	41	47	270	416	266	19.6	5.0	16.1	13.6	29.5	33.8
Opolskie	155	1	3	48	72	31	15.3	0.7	5.2	12.6	24.7	21.0
Podkarpackie	421	2	9	110	176	124	19.8	0.6	6.4	13.5	31.9	43.3
Podlaskie	160	2	1	43	63	51	13.3	1.1	1.3	9.6	19.6	28.6
Pomorskie	432		4	121	216	91	18.9	0.0	2.9	13.9	35.0	31.3
Śląskie	1185	15	18	356	566	230	25.6	2.3	7.2	20.9	42.3	33.8
Świętokrzyskie	374	1	7	68	173	125	29.3	0.6	9.0	14.7	48.3	63.8
Warmińsko-mazurskie	196	1	2	53	85	55	13.5	0.4	2.2	9.7	21.0	31.2
Wielkopolskie	377	2	7	107	173	88	10.9	0.4	3.4	8.1	18.7	20.0
Zachodnio-pomorskie	211	2	6	38	115	50	12.3	0.8	5.9	5.9	22.8	22.4

situation of tuberculosis was worse in rural than in urban areas. In 2012, the third time in the history of Register, the incidence of TB in rural areas was lower than in urban population (Table II).

Bacteriological confirmation was obtained in 5 070 TB patients (67.2% of all TB cases) and in 4 870 cases with pulmonary TB (69.4% of all pulmonary TB cases). Incidence rate of all bacteriologically confirmed TB was 13.2; of pulmonary tuberculosis – 12.6.

Extrapulmonary tuberculosis was culture confirmed in 38.2% of cases.

In 2 778 patients sputum smears were positive (39.6% of patients with all pulmonary tuberculosis; rate 7.2).

In 2012, as earlier, there were differences between voivodships relating the proportion of TB cases with bacteriological confirmation. With regard to pulmonary tuberculosis the percentage of cases with bacteriological confirmation among all pulmonary cases ranged from 60.8% in voivodship warmińsko-mazurskie and 61.2% in voivodship świętokrzyskie to 84.5% in voivodship opolskie and 89.7% in voivodship kujawsko-pomorskie.

Tuberculosis was diagnosed in 243 prisoners (incidence rate 288.0). Among patients registered with tuberculosis in 2012, there were 48 foreigners (0.6% of cases). 75% of patients with foreign citizenship were in age group from 20 to 44 years. In 2012, according to the data obtained from the National Institute of Public Health - National Institute of Hygiene, in 26 patients with HIV infection tuberculosis was AIDS indicative disease.

In 2012 in the all group of TB patients in Poland there were 276 (3.7%) of homeless; 1 905 (25.3%) of unemployed; 2 789 (37%) of pensioners and retired persons; 505 (6.7%) of white collar worker; 1 530 (37%) of farmers and manual workers; 277 (3.7%) of students. Homeless people and unemployed were over-represented among tuberculosis patients. According to Main Statistical Office the unemployment rate in December of 2012 was 13.4%. The census made in February 2013 showed that in Poland there are near 31 000 homeless persons (0.08% of population)(Ministry of Labour and Social Policy).

ANTI-TUBERCULOSIS DRUG RESISTANCE

MDR-TB is defined as tuberculosis caused by bacilli resistant to rifampicin and isoniazid. 31 patients with MDR-TB were registered in 2012. Subjects with MDR-TB constituted 0.7% of cases with known anti-TB drug susceptibility testing results (DST results available in 4659 patients, representing 91.9% of all TB cases with positive cultures). Among patients with MDR-TB was a girl at the age of 13.

Resistance to isoniazid was detected in 159 patients (3.4% of cases with known DST results).

MORTALITY DUE TO TUBERCULOSIS

Mortality from tuberculosis has been calculated on the basis of death certificates. In 2011, according to the Central Statistical Office, tuberculosis was considered the underlying cause of death in 640 of the deceased (1.7 deaths per 100 000 population). The mortality rate in 2011 was higher than in the previous year (1.5). 609 subjects died because pulmonary tuberculosis. Extrapul-

monary tuberculosis was cause of death in 31 persons. According to the Central Statistical Office, deaths from tuberculosis were 0.2% of all deaths and 20.7% of deaths due to infectious and parasitic diseases in Poland.

The highest mortality rate was in the age group of 65 years and more, and was 4.9 (256 deaths). The largest number of people who had died of tuberculosis, were persons aged 45-64 years (303, rate 2.8). There were 3 deaths from tuberculosis among children and 1 in the group of adolescents. Mortality due to TB was four times higher in men than in women; rates respectively – 2.7 and 0.7. The rate of mortality from tuberculosis was the same (1.7) in the rural and the urban population. The highest death rates from tuberculosis were registered in voivodship śląskie (3.1) and lubelskie (2.6), the lowest in Wielkopolska (1.0).

DISSCUSSION

In Poland in 2012, the incidence rate of tuberculosis (19.6) was lower than that for 2011 (22.2), similar to that for 2010 (19.7).

The average annual decrease in TB notification rates in the last five years was 2.4% and was lower than that in the previous five-year period between 2003 and 2007 (3.7 %). In all European Union (EU) countries and two European Economic Area (EEA) countries (Norway and Iceland) 68423 TB cases were reported in 2012; the overall incidence rate was 13.5 . In the last five years the overall average annual decrease in rates in EU and EEA was 5%. Over 50% of cases occurred in the three countries - Romania, the UK and Poland but Poland did not join the group of countries (Romania, Lithuania, Latvia, Bulgaria, Portugal and Estonia) with rates higher than 20 per 100 000. The highest TB incidence rate was recorded in Romania, the lowest in Iceland – 3.4. In most EU countries the incidence rate is less than 10 (for example, Greece – 4.9; Finland – 5.1, Germany and Italy – 5.2; Netherlands – 5.7; Czech Republic – 5.8; Slovakia – 6.4; Denmark – 7.0). The previously untreated new cases represented 80 % of all cases of tuberculosis. Country-specific proportion of new cases ranged from 76% in Romania to 95% in Malta. Poland with the 88.4% proportion of new cases did not differ significantly from the average situation in EU.

In Poland culture confirmation of tuberculosis was reported for higher proportion of cases than in all EU/EEA countries (in EU/EEA it was 62.0 % of all cases; in Poland – 67.2 %).

In Western Europe, the characteristics of tuberculosis are shaped by foreign-origin TB cases, mostly from high TB incidence countries, who are often the majority of patients. In 2012, the largest proportion of foreign-origin cases among TB patients (85%) was recorded in Sweden and Norway.

In Poland, some problems associated with tuberculosis, occur on lower extent than in the EU/EEA.

In Poland, paediatric TB accounted for only 1.3% of all TB cases (incidence rate 1.6 per 100 000 children). In the EU/EEA countries the proportion of children was 5% among all TB cases; the average incidence rate in this age group (3.6) was also higher than in Poland.

In Poland, the highest TB incidence rate was reported in the age group of 65 years and above. Older people may have become infected many years ago, at a time when tuberculosis was more prevalent.

In Poland, the incidence rates of tuberculosis increased with the increase of the age group for which they were calculated. In 2012, the same phenomenon occurred in the five EU countries only: in the Czech Republic, Finland, Slovakia, Slovenia and Hungary. Poland belongs to the group of 10 countries, where > 25 % of new cases of tuberculosis were the subjects ≥ 65 years. In 2012, the oldest patients with tuberculosis in the EU were native Finns (mean age 67.1 years of new cases) and Maltese (mean age 73.2 years of new cases). As in Poland, foreign-origin TB cases in EU/EEA were overall younger than native cases.

The male-to-female ratio notified in TB cases in 2012 in EU/EEA was 1.7:1. In five countries: Malta, Greece, Lithuania, Latvia, Estonia and Poland male predominance was more than twice.

In Poland, 2012, as in previous years, the proportion of purely extrapulmonary tuberculosis in the total number of cases (6.9 %) was low. The second country with very low low proportion of extrapulmonary tuberculosis were Hungary (3%). In the EU the overall proportion was 23 %. In some European countries, extrapulmonary tuberculosis accounted for more than 40 % of all cases (Sweden, the Netherlands and the United Kingdom). The above differences can be explained by differences in patient characteristics in the countries of Central Europe with low proportion of cases of foreign origin, that are at higher risk of extrapulmonary TB.

Mortality from tuberculosis, calculated from death certificates, decreased in Poland over the past five years, although the rate of decline was not constant (in 2007 the ratio was 2.0, in 2010 – 1.5, in 2011 – 1.7).

Among the patients with tuberculosis in Poland in 2012 was over-representation in comparison with the general population, those with low social status.

In 2012, for 21 602 TB patients (31.6 % of all patients in EU/EEA countries) HIV status was reported; 1188 patients (5% of this group) were HIV-positive. Testing of all TB patients for HIV was carried out in 16 countries. The highest proportion of HIV-co-infected TB cases was found in Estonia – 17 %. In Poland, TB patients are not routinely tested for the presence of HIV

infection. Known is, what is the number of people in whom tuberculosis was AIDS indicative disease. This number has been low for years.

In Poland, the proportion of culture-positive TB cases with resistance to isoniazid and rifampicin was low. Overall, the proportion of cases in EU/EEA with MDR-TB was 5% of cases with known drug susceptibility testing results. Among UE/EEA countries, the proportion of MDR-TB cases in 2012 was highest in Estonia, Latvia and Lithuania, and ranged between 11.3 and 23 % of new pulmonary TB cases.

CONCLUSIONS

The incidence of tuberculosis in Poland is still higher than overall incidence in EU/EEA countries (19.6 *vs*. 13.5). The proportion of foreign-origin (non-citizen) TB cases among tuberculosis patients in Poland is small. The highest incidence occurs in the older age groups and Poland is one of the EU/EEA countries with a higher participation of patients aged 65 years and above among all TB cases. Patients with tuberculosis in Poland are in a majority men; the male-to-female ratio notified in TB cases for 2012 was one of the highest in the EU/EEA.

In Poland, unfavorable phenomena such as paediatric tuberculosis, HIV co-infection, the prevalence of tuberculosis caused by drug-resistant mycobacteria are less common compared with EU/EEA countries. The low prevalence of paediatric TB suggest that recent transmission does not contribute greatly to current TB dynamics nevertheless teenagers require special concern because of the increase of TB incidence rate in this age group in 2012.

Among TB patients in Poland, the percentage of the homeless and unemployed persons is higher than in the general society. The proportion of patients with pulmonary tuberculosis fibro-cavernous, which points to a late diagnosis of the disease, decreased in recent years. The incidence of tuberculosis among prisoners is many times higher than in the general population.

Received: 14.04.2014
Accepted for publication: 24.04.2014

Address for correspondence:
Prof. nadzw. dr hab. Maria Korzeniewska-Koseła
National Tuberculosis and Lung Diseases Research Institute,
Department of Tuberculosis Epidemiology and Surveillance
26 Płocka Street, 01-138 Warsaw, Poland
Tel. +48224312123
e-mail: m.korzeniewska@igichp.edu.pl