Public Health Action

International Union Against Tuberculosis and Lung Disease
Health solutions for the poor

VOL 5 NO 3 PUBLISHED 21 SEPTEMBER 2015

Social determinants and risk factors for tuberculosis in national surveillance systems in Europe

P. de Colombani,[1] A. Hovhannesyan;[2] Wolfheze Working Group on Social Determinants of TB and Drug Resistant TB

http://dx.doi.org/10.5588/pha.15.0026

Setting: National tuberculosis programmes (NTPs) of the 53 Member States of the World Health Organization (WHO) European Region.

Objectives: To identify the social determinants and underlying risk factors for tuberculosis (TB) as routinely monitored by NTPs and to identify those feasible and appropriate to be included in the annual reporting to the joint European Centre for Disease Prevention and Control (ECDC) WHO reporting platform.

Design: A semi-structured questionnaire sent to 53 national TB surveillance correspondents.

Results: A total of 47 countries submitted questionnaires; most of the countries collect a number of social determinants and risk factors that are not requested for reporting to the Joint ECDC-WHO Reporting Platform. Occupation/employment, homelessness, diabetes mellitus and use of alcohol are collected by the majority of countries, but without standardised definitions.

Conclusions: Four social determinants/risk factors are already included in the national TB surveillance systems of the majority of countries and could be incorporated in the annual reporting to the Joint ECDC/WHO Reporting Platform. Standardised epidemiological case definitions need to be adopted.

Social determinants play an important role in the epidemiology of tuberculosis (TB) and are considered under the pillar 'Bold policies and supportive systems' of the End TB Strategy, the global strategy and targets for TB prevention, care and control after 2015.[1,2] They are the upstream determinants at the top of the causal pathway linking poverty and low socio-economic status to the factors that directly increase the risk of being infected (exposure to infectious sources) or developing TB (impairment of the immune defense system).[3] Globally,[4] and in the World Health Organization (WHO) European Region,[5] there is considerable evidence of the unequal distribution of TB prevalence and mortality in countries and their converse relationship with wealth; similarly, there is evidence to show how TB disease has a negative impact on the socio-economic conditions of the patients and their families. To address these issues, countries in the WHO European Region have included social determinants in their anti-tuberculosis drug resistance surveys[6,7] and included TB among those indicators to measure health status and performance of the health systems.[8] Both the Consolidated Action Plan to Prevent and Combat Multidrug and Extensively Drug-resistant TB in the WHO European Region 2011–2015[9] and the Framework Action Plan to Fight TB in the European Union[10] of the European Centre for Disease Prevention and Control (ECDC) call for tackling TB among socially vulnerable populations.

There is, however, limited systematic documentation on the monitoring and use of data on social determinants and risk factors for TB by the 53 Member State countries of the WHO European Region. Every year, each of these countries has to report a standard set of data to the Joint ECDC/WHO Reporting Platform for the annual publication of the WHO Global Tuberculosis Report[11] and the ECDC/WHO Tuberculosis Surveillance and Monitoring report.[12] At present, the ECDC/WHO request countries to report on national/foreign birth or citizenship, current status of imprisonment, age, sex and human immunodeficiency virus (HIV) infection for analysis of TB case detection and treatment outcome. In addition, since 2011, countries have been requested to report, when available, on the number of new TB cases among refugees/displaced people, cross-border populations, orphaned/homeless, slum dwellers, ethnic minorities, alcohol abusers, injecting drug users, people with diabetes mellitus and tobacco smokers. The variables of these groups are poorly reported.[12] However, there is anecdotal evidence that the national TB programmes (NTPs) of many countries collect more data than those reported to ECDC/WHO to tailor their TB prevention and control interventions.

The objectives of this survey were to identify the social determinants/risk factors for TB as routinely monitored by the NTPs and to identify those feasible and appropriate for inclusion in the annual reporting to the Joint ECDC/WHO Reporting Platform, in order to improve the understanding of the role played by social determinants/risk factors in the epidemiology and control of TB in the WHO European Region.

The survey was one of the activities of the Working Group on Social Determinants of TB and Drug Resistant TB that was established following a decision taken at the 12th WHO National TB Programme Managers' Meeting and 16th Wolfheze Workshops held in The Hague, Netherlands, in May 2013.

METHODOLOGY

Study design

A survey using a semi-structured questionnaire designed in English and Russian and pre-tested in two countries (Appendix).

AFFILIATIONS
1 World Health Organization (WHO), Regional Office for Europe, Copenhagen, Denmark
2 WHO Consultant, Yerevan, Armenia

CORRESPONDENCE
Pierpaolo de Colombani
World Health Organization
Regional Office for Europe
UN City
Marmorvej 51
DK–2100 Copenhagen
Denmark
Tel: (+45) 4533 6650
Fax: (+45) 3917 1818
e-mail: pco@euro.who.int

ACKNOWLEDGEMENTS
Wolfheze Working Group on Social Determinants of TB and Drug Resistant TB: W. Arrazola de Oñate, Brussels, Belgium; L. Domente, Chisinau, Republic of Moldova; A. Reeves, Oxford, UK; A. Skrahina, Minsk, Belarus; and S. Simpson, Montluel, France.
Conflicts of interest: none declared.

KEY WORDS
surveillance; social determinants; risk factors; tuberculosis; Europe

Received 21 May 2015
Accepted 7 July 2015

PHA2015;5(3):194–201

Setting

The WHO European Region has 53 Member States with large variations in TB epidemiology and socio-economic settings. Thirty-one countries are members of the European Union (EU) or the European Economic Area (EEA).* Eighteen countries are of high priority for TB control (HPC),†[13] and 15 countries have a high MDR-TB burden.[11] It should be noted that five countries are listed under both the EU and the HPC groups (Bulgaria, Estonia, Latvia, Lithuania and Romania). Since January 2008, the ECDC and the WHO Regional Office for Europe have established a joint reporting platform aiming at collecting annually a set of data from all countries in the Region and publishing them in the WHO Global Tuberculosis Report[11] and the ECDC/WHO Tuberculosis Surveillance and Monitoring in Europe report.[12] The variables to be collected are agreed upon by experts and their definitions are in line with the WHO definitions. Data are reported through the internet and by the national TB surveillance correspondents, each of them officially assigned by the Ministry of Health. The national TB surveillance correspondents are responsible for the TB recording and reporting system in the country and sources of the data reported annually to ECDC/WHO. In most of the countries of Eastern and Central Europe, in contrast to Western Europe, the national TB surveillance correspondents are staff working under a manager appointed by the Ministry of Health for overall governance of the NTP.

Study population and study period

The survey explored the social determinants and risk factors for TB as recorded by the NTPs of the 53 countries of the WHO European Region during the year 2014.

Data variables and data sources

The questionnaire sent to the national TB surveillance correspondents proposed a list of variables. Thirteen socio-economic conditions were proposed: education, employment, occupation, income, history of imprisonment, national/foreign birth/citizenship, employment abroad, ethnic minority, refugee/displaced, homeless, orphan, slum dweller, urban/rural and other (to be specified). Twelve risk factors for TB were also explored: age, sex, housing, smoking tobacco, silicosis, use of alcohol, HIV infection, use of illicit drugs, antiblastic chemotherapy/other causes of immunodeficiency, diabetes mellitus, malnutrition, pregnancy, other (to be specified). No definitions were provided for the variables in order to keep the questionnaire simple. Additional closed questions were made to explore how data are processed at the central level (quarterly/annual consolidation or from electronic case-based database), at which level data are available (district and/or national), the uses of the data collected (targeting for screening, local (district/regional) or national annual reporting, other [to be specified]). The last question was open-ended and asked which information could be useful to add to the routine national recording/reporting system to improve the monitoring of social determinants/risk factors for TB in the country.

Data analysis

The questionnaire was e-mailed in both English and Russian on 24 March 2014 to all national TB surveillance correspondents. Two reminders were e-mailed before receiving the last questionnaire on 17 June. All answers were entered into a spreadsheet and analysed by grouping countries under EU/EEA, non-EU/EEA and HPC.

RESULTS

Forty-seven (89%) of the total 53 countries in the WHO European Region participated in the survey by completing and returning the questionnaire. Six countries did not respond: Austria, Israel, Monaco, San Marino, Slovenia and Turkmenistan. Of those who responded, there were 28 EU/EEA, 19 non-EU/EEA and 17 HPC countries, accounting for 97% of the population and 98% of the estimated incident TB cases of the WHO European Region.

Data processing at the central level

Of the 47 countries that participated in the survey, 40 (85%) maintain a case-based (one record per patient) electronic national database, while four (Azerbaijan, Italy, Russian Federation and Ukraine) use consolidated data at the central level quarterly and annually. The case-based electronic national TB database is in place in 27 (96%) EU/EEA, 15 (79%) non-EU/EEA and 14 (82%) HPC countries.

Collection of information on TB social determinants

The question concerning which TB social determinants are collected by the NTP was answered by all participating countries. The determinants collected by more than half of the EU/EEA, non-EU/EEA and HPC countries are national/foreign birth or citizenship (96.4% EU/EEA, 94.7% non-EU/EEA and 88.2% HPC), occupation/employment (respectively 67.9%, 89.5% and 88.2%), homelessness/living in a shelter (respectively 57.1%, 78.9% and 70.6%) and history of imprisonment (respectively 53.6%, 78.9% and 76.5%) (Table 1). Information on living in an urban/rural area and condition of refugee/displaced/asylum seeker is also collected by a significant number of countries, but not always by the majority in each of the three groups of countries.

At present, countries are requested to report to the Joint ECDC/WHO Reporting Platform only on national/foreign birth/citizenship (where foreign origin refers to birth in or citizenship of a country different from the reporting country) and the current status of imprisonment. The number of social determinants collected by each country varied from 13 (Luxemburg) to 0 (Bulgaria), with an average of 6.4 variables. Table 1 also provides a glimpse of the terminology used by countries, with different terms describing overlapping conditions (e.g., living in a mental health institution, living in a hospice, living in a nursing home, disability) or conditions of different epidemiological relevance (e.g., foreign birth and foreign citizenship; history of imprisonment and current imprisonment).

Collection of information on TB risk factors

The question concerning which TB risk factors are collected by the NTP was answered by all the participating countries. The age and sex of patients are variables recorded by all countries (Table 2). In addition, more than half of the EU/EEA, non-EU/EEA and HPC countries collect risk factors such as HIV status (respectively 82.1%, 89.5% and 100%), diabetes mellitus (respectively 53.6%, 63.2% and 58.8%) and alcohol use (respectively 53.6%, 57.9% and 58.8%). Use of illicit drugs is also collected by a significant number of countries, but not always by the majority in each group. Only age, sex and HIV infection are then reported to the Joint ECDC/WHO Reporting Platform.

Other risk factors not proposed by the questionnaire but routinely recorded by countries are: peptic ulcer, chronic obstructive

*Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxemburg, Malta, Monaco, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, United Kingdom.

†Armenia, Azerbaijan, Belarus, Bulgaria, Estonia, Georgia, Kazakhstan, Kyrgyzstan, Latvia, Lithuania, the Republic of Moldova, Romania, the Russian Federation, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.

TABLE 1 Social determinants collected through routine national TB surveillance by number and percentage of countries

Social determinant	All countries (*n* = 47) *n* (%)	EU/EEA (*n* = 28) *n* (%)	Non-EU/EEA (*n* = 19) *n* (%)	HPC (*n* = 17) *n* (%)
National/foreign birth or citizenship, documented/undocumented people*	45 (95.7)	27 (96.4)	18 (94.7)	15 (88.2)
Occupation†	33 (70.2)	19 (67.9)	14 (73.7)	12 (70.6)
Employment‡	31 (66.0)	14 (50.0)	17 (89.5)	15 (88.2)
Homeless, living in a shelter*	31 (66.0)	16 (57.1)	15 (78.9	12 (70.6)
History of imprisonment, current imprisonment*	30 (63.8)	15 (53.6)	15 (78.9)	13 (76.5)
Urban/rural	30 (63.8)	13 (46.4)	17 (89.5)	16 (94.1)
Refugee/displaced people, asylum seekers*	25 (53.2)	14 (50.0)	11 (57.9)	7 (41.2
Education	17 (36.2)	5 (17.9)	12 (63.2)	8 (47.1)
Ethnic minority, Roma*	17 (36.2)	9 (32.1)	8 (42.1)	7 (41.2)
Employment abroad, repatriated,* migrant*	11 (23.4)	3 (10.7)	8 (42.1)	7 (41.2)
Slum dweller	8 (17.0)	3 (10.7)	5 (26.3)	4 (23.5
Income	7 (14.9)	2 (7.1)	5 (26.3)	3 (17.6)
Living in long-term care institution (mental hospital, hospice, nursing home, etc.)*	6 (12.8)	5 (17.9)	1 (5.3)	0
Orphan	5 (10.6)	1 (3.6)	4 (21.1)	2 (11.8)
Marginal group*	2 (4.3)	2 (7.1)	0	0
Living alone*	1 (2.1)	1 (3.6)	0	0
Disability*	1 (2.1)	0	1 (5.3)	1 (5.9)

*Other condition added by the countries.
†Type of working activity.
‡Employment/unemployment status.
TB = tuberculosis; EU = European Union; EEA = European Economic Area; HPC = high-priority country for TB control.

TABLE 2 Risk factors collected through routine national TB surveillance by number and percentage of countries

Risk factor	All countries (*n* = 47) *n* (%)	EU/EEA (*n* = 28) *n* (%)	Non-EU/EEA (*n* = 19) *n* (%)	HPC (*n* = 17) *n* (%)
Age	47 (100)	28 (100)	19 (100)	17 (100)
Sex	47 (100)	28 (100)	19 (100)	17 (100)
HIV infection, sexual orientation*	40 (85.1)	23 (82.1)	17 (89.5)	17 (100)
Diabetes mellitus	27 (57.4)	15 (53.6)	12 (63.2)	10 (58.8)
Use of alcohol	26 (55.3)	15 (53.6)	11 (57.9)	10 (58.8)
Use of illicit drugs	25 (53.2)	12 (42.9)	13 (68.4)	12 (70.6)
Antiblastic chemotherapy/other causes of immunodeficiency, cancer,* inflammatory articular diseases,* sarcoidosis,* lung cancer,* liver disease,* peptic ulcer*	20 (42.6)	15 (53.6)	5 (26.3)	3 (17.6)
Smoking tobacco, chronic obstructive pulmonary disease*	14 (29.8)	6 (21.4	8 (42.1)	7 (41.2)
Silicosis	13 (27.7)	9 (32.1	4 (21.1)	4 (23.5)
Housing	12 (25.5)	7 (25.0)	5 (26.3)	5 (29.4)
Pregnancy	10 (21.3)	6 (21.4)	4 (21.1)	2 (11.8)
Malnutrition	7 (14.9)	4 (14.3)	3 (15.8)	2 (11.8)
TB contact*	3 (6.4)	1 (3.6)	2 (10.5)	3 (17.6)
Renal insufficiency*	3 (6.4)	3 (10.7)	0	0
Maternity up to one year from delivery*	1 (2.1)	1 (3.6	0	0
Previously treated for latent tuberculous infection*	1 (2.1)	1 (3.6)	0	0

*Other condition added by the countries.
TB = tuberculosis; EU = European Union; EEA = European Economic Area; HPC = high-priority country for TB control; HIV = human immunodeficiency virus.

pulmonary disease (Czech Republic), liver disease (Czech Republic, Portugal), inflammatory articular diseases, lung cancer, cancer and sarcoidosis (Portugal). One country (Czech Republic) collects information on the sexual orientation of the patients.

The number of risk factors routinely collected by each country varied from 12 (Andorra, Czech Republic, Luxemburg, Montenegro, Portugal, Slovakia) to two (Germany, Italy, Poland, Sweden), with an average of 6.4 variables.

Use of collected information

Forty-two (95%) of the 44 countries responding to this question declared that the information collected on social determinants

TABLE 3 Current and future use of the information collected by routine national TB surveillance

Answer	All countries (*n* = 47) *n* (%)	EU/EEA (*n* = 28) *n* (%)	Non-EU/EEA (*n* = 19) *n* (%)	HPC (*n* = 17) *n* (%)
Information available only at district level	1 (2.1)	0	1 (5.3)	1 (5.9)
Information available at district and national level	42 (89.4)	24 (85.4)	18 (94.7)	16 (94.1)
Information used to target population groups for TB screening	31 (65.9)	17 (60.7	14 (73.7)	13 (76.5)
Information shown in the annual NTP report	42 (89.4)	25 (89.3)	17 (89.5)	16 (94.1)
Information shown in the district/regional report	25 (53.3)	13 (46.4)	12 (63.2)	13 (76.5)

TB = tuberculosis; EU = European Union; EEA = European Economic Area; HPC = high-priority country for TB control; NTP = national tuberculosis programme.

and risk factors for TB is available at the national level as well as at the district (*rayon* in the Russian version of the questionnaire) level (Table 3).

Thirty-one (70%) countries use the information on social determinants and risk factors for targeting population groups for TB screening. Other uses were added by countries, as follows: presenting to field staff (Armenia); planning for incentives to patients (Georgia); guiding policies and guidelines (Ireland); and increasing awareness (Ireland).

Forty-two (95%) countries include the data collected on social determinants and risk factors for TB in their NTP annual report, while only 25 (59%) countries include such data in local (district/regional) annual reports.

Information that could be added

To the question about which information could be added to routine national recording and reporting to better monitor social determinants and risk factors for TB, 22 countries suggested or disclosed that they had already planned the following variables for inclusion: income (Albania, Armenia, Georgia, the former Yugoslav Republic of Macedonia, Portugal, Turkey, United Kingdom); education (Armenia, Latvia, Turkey); household size (Bosnia and Herzegovina, United Kingdom); housing (the former Yugoslav Republic of Macedonia, Portugal); ethnic minority (Ireland); homeless/slum dweller (Turkey); refugee/displaced (Turkey); urban/rural (Portugal); type of insurance (Czech Republic); breadwinner (Georgia); marital status (Croatia); alcohol use (Armenia, Italy, Sweden, Tajikistan, Turkey); pregnancy (Albania, Italy, Latvia, Sweden); smoking tobacco (Armenia, Ireland, Portugal, Turkey); use of drugs (Italy, Sweden, Turkey); history of immunosuppressive therapy (Denmark, Iceland, Italy); malnutrition (Albania, Italy, Latvia); diabetes mellitus (Italy, Tajikistan, Turkey); co-morbidities (Armenia); and contact with TB (Montenegro).

DISCUSSION

The survey provides an overview of the type and number of social determinants and underlying risk factors collected by countries of the WHO European Region through their routine national TB surveillance system. The findings suggest that most of the countries, whether EU/EEA or not, collect information on more conditions than those to be reported to the Joint ECDC/WHO Reporting Platform. Specific conditions of TB patients that are already collected by the majority of countries could be easier to incorporate into the minimum set of data for annual submission to the Joint ECDC/WHO Reporting Platform. This study suggests that occupation and homelessness among the social determinants, and diabetes mellitus and use of alcohol among the risk factors, are such conditions. The relevance of these factors is well documented in the published literature.[3–5,14,15] Their inclusion in the ECDC/WHO surveillance could, for both the national and European regional levels, document their relevance for TB epidemiology, increase the awareness of policy makers, promote intersectoral collaboration in addressing them (with social services, migration authorities, prison services, etc.) and improve the monitoring of intervention outcomes. These expected benefits, together with standardised epidemiological case definitions and publication of the information collected, could balance the additional burden of reporting. The incompleteness of reporting social determinants/risk factors already included in the Joint ECDC/WHO Reporting Platform, as documented by the study, is expected to decrease over a few years of routine practice (as can be seen by comparing the reporting of social determinants/risk factors to ECDC/WHO from 2013[16] to the present,[12] even if it is still not ideal). The challenges (operational, financial) for NTPs to document additional social determinants/risk factors for TB through periodic surveys appear much higher.

The survey also documented that countries collect conditions of overlapping epidemiological relevance or conditions with specifications of different epidemiological relevance. To keep the questionnaire simple, this study did not ask for the case definition that the countries use for each of the conditions explored. However, whether or not such definitions exist and whatever the reason for their adoption in each country (political, legal, historical, etc.), standard case definitions for the European Region are strongly needed and are currently not provided by the ECDC/WHO in most cases.[12] A proper epidemiological case definition (e.g., use of 'illicit' drugs) is of paramount importance for the analysis and interpretation of the data collected in a country and for comparison with other countries. A number of social and medical conditions already have epidemiological case definitions that are widely used internationally and can be adopted for the future expansion of the Joint ECDC/WHO Reporting Platform (Table 4).

The strengths of this survey are the high rate of participation of the countries of the WHO European Region and the accuracy of the information retrieved, as provided by the network of national TB surveillance correspondents. No major differences in TB surveillance were expected from the six countries that did not respond to the questionnaire. A limitation of this survey could be the use of a questionnaire in English and Russian only, which could have caused an incorrect understanding of questions and/or translation of responses. Furthermore, case definitions were not explored, which could have resulted in assigning some of the reported conditions under a certain social determinant/risk factor instead of another. Considering that national TB surveillance correspondents do not have NTP oversight in many countries of the Region, they were not asked directly which data should be added for annual submission to the Joint ECDC/WHO Reporting.

TABLE 4 Case definition of selected social determinants and risk factors for TB

Case	Case variables and definitions
Social determinants	
Origin (geographic)	National origin: person born in the country
	Foreign origin: person born in another country
Imprisonment[17]	Prisoner: any person deprived of personal liberty as a result of administrative detention, pre-trial detention, or conviction for an offence
Occupation[18]	Employed: individual receiving an income from an employer or self-employed
	Unemployed: individual without work but available for and seeking work
Homelessness[19]	Homeless: individual without stable, permanent, appropriate housing, or the immediate prospect, means and ability of acquiring it
Risk factors	
HIV infection[20]	Person living with HIV:
	Adult and child aged ⩾18 months:
	Positive HIV antibody testing (rapid or laboratory-based enzyme immunoassay), confirmed by a second HIV antibody test (rapid or laboratory-based enzyme immunoassay) relying on different antigens or of different characteristics; and/or positive virological test for HIV or its components (HIV-RNA or HIV-DNA or ultrasensitive HIV p24 antigen) confirmed by a second virological test obtained with a different test
	Child aged <18 months:
	Positive virological test for HIV or its components (HIV-RNA or HIV-DNA or ultrasensitive HIV p24 antigen) confirmed by a second virological test more than 4 weeks after birth. Positive HIV antibody testing is not recommended for definitive or confirmatory diagnosis of HIV infection in children until 18 months of age
Diabetes mellitus[21]	Person with diabetes mellitus:
	Presence of fasting plasma glucose ⩾7.0 mmol/l (126 mg/dl) or 2 h plasma glucose ⩾11.1 mmol/l (200 mg/dl)
Use of alcohol[22]	Harmful use of alcohol:
	Intake of 5 or more drinks (60 g pure alcohol) on one occasion monthly or more often during the past 12 months

TB = tuberculosis; HIV = human immunodeficiency virus.

References

1 Lonnroth K, Castro K G, Chakaya J M et al. Tuberculosis control and elimination 2010–50: cure, care, and social development. Lancet 2010; 375: 1814–29.
2 World Health Organization. The End TB Strategy. Global strategy and targets for tuberculosis prevention, care and control after 2015. Geneva: WHO, 2015. http://www.who.int/tb/post2015_TBstrategy.pdf?ua=1 Accessed July 2015.
3 Lonnroth K, Jaramillo E, Williams B, et al. Drivers of tuberculosis epidemics: the role of risk factors and social determinants. Soc Sci Med 2009; 68: 2240–2246.
4 Dye C, Lonnroth K, Jaramillo E, et al. Trends in tuberculosis incidence and their determinants in 134 countries. Bull World Health Organ 2009; 87: 683–691.
5 Ploubidis G B, Palmer M J, Blackmore C, et al. Social determinants of tuberculosis in Europe: a prospective ecological study. Eur Respir J 2012; 40: 925–930.
6 Lonnroth K, Holtz T H, Cobelens F, et al. Inclusion of information on risk factors, socio-economic status and health seeking in a tuberculosis prevalence survey. Int J Tuberc Lung Dis 2009; 13: 171–172.
7 Skrahina A, Hurevich H, Zalutskaya A, et al. Multidrug resistant tuberculosis in Belarus: the size of the problem and associated risk factors. Bull World Health Organ 2013; 91:3 6–45.
8 World Health Organization Regional Office for Europe. Case studies on health system performance assessment. A long-standing development in Europe. Copenhagen, Denmark: WHO Regional Office for Europe, 2012. http://www.euro.who.int/__data/assets/pdf_file/0008/168875/Case-Studies-for-HSPA-ENG.pdf Accessed July 2015.
9 World Health Organization Regional Office for Europe. Roadmap to prevent and combat drug-resistant tuberculosis. The consolidated action plan to prevent and combat multidrug- and extensively drug-resistant tuberculosis in the WHO European Region 2011–2015. Copenhagen, Denmark: WHO Regional Office for Europe, 2011. http://www.euro.who.int/__data/assets/pdf_file/0014/152015/e95786.pdf?ua=1 Accessed July 2015.
10 European Centre for Disease Prevention and Control. Framework action plan to fight tuberculosis in the European Union. Stockholm, Sweden: ECDC, 2008. http://ecdc.europa.eu/en/publications/Publications/0803_SPR_TB_Action_plan.pdf Accessed July 2015.
11 World Health Organization. Global tuberculosis report 2014. WHO/HTM/TB/2014.08. Geneva, Switzerland: WHO, 2014. http://apps.who.int/iris/bitstream/10665/137094/1/9789241564809_eng.pdf?ua=1 Accessed July 2015.
12 European Centre for Disease Prevention and Control/World Health Organization Regional Office for Europe. Tuberculosis surveillance and monitoring in Europe 2015. Stockholm, Sweden: ECDC, 2015. http://ecdc.europa.eu/en/publications/Publications/tuberculosis-surveillance-monitoring-Europe-2015.pdf Accessed July 2015.
13 World Health Organization Regional Office for Europe. Plan to stop TB in 18 high-priority countries in the WHO European Region, 2007–2015. Copenhagen, Denmark: WHO Regional Office for Europe, 2007. http://www.euro.who.int/__data/assets/pdf_file/0005/68180/E91049.pdf?ua=1 Accessed July 2015.
14 Baghaei P, Marjani M, Javanmard P, et al. Diabetes mellitus and tuberculosis facts and controversies. J Diabetes Metab Disord 2013; 12: 58.
15 Lonnroth K, Williams B G, Stadlin S, et al. Alcohol use as a risk factor for tuberculosis: a systematic review. BMC Public Health 2008; 8: 289.
16 European Centre for Disease Prevention and Control/World Health Organization Regional Office for Europe. Tuberculosis surveillance and monitoring in Europe 2013. Stockholm, Sweden: ECDC, 2013. http://ecdc.europa.eu/en/publications/Publications/Tuberculosis-surveillance-monitoring-2013.pdf Accessed July 2015.
17 Office of the High Commissioner for Human Rights. Professional training series N° 7. Training manual on human rights monitoring. New York, USA: United Nations, 2001. http://www.ohchr.org/Documents/Publications/Training7Introen.pdf Accessed July 2015.
18 International Labour Organization. World of Work Report 2014: developing new jobs. Revised edition. Geneva, Switzerland: ILO, 2014. http://www.ilo.org/wcmsp5/groups/public/---dgreports/---dcomm/documents/publication/wcms_243961.pdf Accessed July 2015.
19 Canadian Observatory on Homelessness/Homeless Hub. Canadian definition of homelessness. Toronto, Canada: Canadian Observatory on Homelessness, 2012. http://www.homelesshub.ca/CHRNhomelessdefinition/ Accessed July 2015.
20 World Health Organization. WHO case definitions of HIV for surveillance and revised clinical staging and immunological classification of HIV-related disease in adults and children. Geneva, Switzerland: WHO, 2007. http://www.who.int/hiv/pub/guidelines/HIVstaging150307.pdf Accessed July 2015.
21 World Health Organization/International Diabetes Federation. Definition and diagnosis of diabetes mellitus and intermediate hyperglycaemia: report of a WHO/IDF consultation. Geneva, Switzerland: WHO, 2006. http://www.who.int/diabetes/publications/Definition%20and%20diagnosis%20of%20diabetes_new.pdf Accessed July 2015.
22 European Commission, Health and Consumers Directorate-General. Alcohol-related indicators. Report of the work of the Committee on alcohol data, indicators and definitions. Final version, February 2010. Brussels, Belgium: European Commission Health and Consumers Directorate-General. http://ec.europa.eu/health/indicators/committees/alcohol_subindicators_draft_6_2010-02-22.pdf Accessed July 2015.

APPENDIX Questionnaire (English version)

This questionnaire is being administered as a part of a research initiative by the Working Group on Social Determinants of Tuberculosis and Drug-resistant Tuberculosis created at the 16th Wolfheze Workshop and 12th WHO National Tuberculosis Programme Managers' Meeting held on 29–31 May 2013 in The Hague, Netherlands. The objective of this questionnaire is to know what data on upstream social determinants (socio-economic status, migration, urbanisation, education, etc.) and downstream intermediate risk factors (HIV, alcoholism, smoking tobacco, diabetes, etc.) are recorded by the national TB programmes but not reported to WHO/ECDC. The information gathered may be used to develop recommendations to standardise and further improve the surveillance of TB and M/XDR-TB determinants in our region. The results of this survey will be reported at the 17th Wolfheze Workshop. Your collaboration in completing this questionnaire is greatly appreciated; please send your completed questionnaire to XX, xx@xx.xxx (if in English) or to XX, xx@xx.xxx (if in Russian).

1 Your country

2 Person(s) completing this questionnaire

Name	
e-mail	
Functional title	
Affiliation of institution	

3 How do you process TB data at central level? *(Please tick only one option below)*

Electronic case-based database (electronic record for each patient)	
Consolidated quarterly/annual data	

4 Do you collect information on any of the TB social determinants listed below? *(Please tick all applicable choices in the list below; add other conditions if necessary)*

	Education
	Employment
	Occupation
	Income
	History of imprisonment
	National/foreign birth/citizenship
	Employment abroad
	Ethnic minority
	Refugee/displaced
	Homeless
	Orphan
	Slum dweller
	Urban/rural
	Other (specify):
	No, we do not collect such information

5 Do you collect information on any of the TB intermediate risk factors listed below? *(Please tick all applicable choices in the list below; add other conditions if necessary)*

	Age
	Sex
	Housing
	Smoking tobacco
	Silicosis
	Use of alcohol
	HIV infection
	Use of illicit drugs
	Antiblastic chemotherapy, other causes of immunodeficiency
	Diabetes mellitus
	Malnutrition
	Pregnancy
	Other (specify):
	No, we do not collect such information

6 Where is the information that you collect available? *(Please tick only one option below)*

Available only at district level	
Available at district and national level	

7 How do you use the information that you collect on TB determinants? *(Please tick all applicable choices below)*

Targeting population groups for TB screening	
Inclusion in the annual report of the National TB Programme	
Inclusion in the district/regional annual report	
Other (please specify below):	

8 In your opinion, what information can be added to your routine recording and reporting system to better monitor the role played by social determinants and risk factors in the TB epidemiology of your country? *(Please enter one or more variables in the field below)*

THANK YOU

Contexte : Programmes nationaux contre la tuberculose (PNT) des 53 états membres de la région Europe de l'Organisation Mondiale de la Santé (OMS).
Objectifs : Identifier les déterminants sociaux et les facteurs de risque sous-jacents de la tuberculose (TB) tels qu'ils sont suivis en routine par les PNT et identifier ceux qui sont faciles à recueillir et appropriés pour les inclure dans le rapport annuel à la plate-forme conjointe du Centre européen de prévention et contrôle des maladies (CEPCM) et l'OMS.
Schéma : Un questionnaire semi-structuré a été envoyé à 53 correspondants des programmes nationaux de surveillance de la TB.
Résultats : Au total, 47 pays ont soumis leurs questionnaires ; la plupart des pays recueillent un certain nombre de déterminants sociaux et de facteurs de risque qui ne sont pas exigés dans les rapports destinés à la plate-forme conjointe CEPCM-OMS. Profession, absence de domicile fixe, diabète et consommation d'alcool sont recueillis par la majorité des pays, mais sans définitions standardisées.
Conclusions : Quatre déterminants sociaux/facteurs de risque sont déjà inclus dans le système national de surveillance de la TB dans la majorité des pays et pourraient être incorporés dans le rapport annuel à la plate-forme conjointe CEPCM/OMS. Mais il faut adopter des définitions de cas épidémiologiques standardisées.

Marco de referencia: Los programas nacionales contra la tuberculosis (PNT) de los 53 Estados Miembros de la Región Europea de la Organización Mundial de la Salud (OMS).
Objetivos: Encontrar los determinantes sociales y los factores de riesgo subyacentes de contraer la tuberculosis (TB), como se recogen de manera sistemática en la vigilancia de los PNT y escoger los determinantes cuya recogida es factible y es apropiado incluirlos en el informe anual que se presenta a la plataforma de notificación conjunta del Centro Europeo para la Prevención y el Control de las Enfermedades (CEPCE) y la OMS.
Métodos: Se envió un cuestionario semiestructurado a 53 corresponsales nacionales de la vigilancia de la TB.
Resultados: Se recibieron cuestionarios de 47 países; la mayoría de países recoge una serie de determinantes sociales y factores de riesgo cuya notificación no se exige en el informe a la plataforma conjunta de notificación del CEPCE y la OMS. La mayor parte de los países obtiene información sobre los siguientes determinantes: ocupación o empleo, falta de vivienda, diabetes y consumo de alcohol, sin definiciones normalizadas.
Conclusión: El sistema de vigilancia de la TB de la mayoría de los países incluye ya cuatro determinantes sociales o factores de riesgo de padecer la enfermedad que se podrían incorporar a la plataforma de notificación conjunta del CEPCE y la OMS. Es preciso adoptar definiciones de caso epidemiológicas normalizadas.

Public Health Action (PHA) The voice for operational research.
Published by The Union (www.theunion.org), PHA provides a platform to fulfil its mission, 'Health solutions for the poor'. PHA publishes high-quality scientific research that provides new knowledge to improve the accessibility, equity, quality and efficiency of health systems and services.

e-ISSN 2220-8372
Editor-in-Chief: Dermot Maher, MD, Switzerland
Contact: pha@theunion.org
PHA website: http://www.theunion.org/index.php/en/journals/pha
Article submission: http://mc.manuscriptcentral.com/pha