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Screening for active and latent TB among migrants in France

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SUMMARY

SETTING: Migrants to Europe face a disproportionate burden of infections, including TB, yet little is known about the approach taken by primary and secondary care providers to screening and treatment. We therefore explored policy and practice relating to screening of active TB and latent TB infection (LTBI) in France.

METHODS: We conducted an online national survey of French primary and secondary care physicians regarding their practices in relation to TB/LTBI screening among migrants.

RESULTS: 367 physicians responded to the questionnaire among which 195 (53.1%) were primary care physicians, 126 (34.3%) were TB specialists in secondary care, and 46 (12.5%) other physicians; 303 (85.5%) were involved daily in the care of migrants. Most respondents recommended systematic TB screening with chest X-ray for migrants from medium and high-incidence countries (71.9%). Primary care physicians were less likely to offer screening than physicians in other settings (aOR 0.21, 95% CI 0.09–0.48). 220 (61.8%) offered LTBI screening for children (<15 years) and 34.0% for all migrants from high incidence countries.

CONCLUSION: Improving awareness on TB screening is a critical next step to improve health outcomes in migrant groups and meet regional targets for tackling TB.

KEY WORDS: tuberculosis; screening; migrants; tuberculosis infection

TB disease is still a major burden in terms of mortality in the world. In 2019, 10 million people developed TB, and 1.4 million died.¹ Furthermore, almost a quarter of the world's population is estimated to have latent TB infection (LTBI).² Migrants represent 32.7% of incident TB cases in Europe,^{3,4} and incidence is high during the first years after arrival.⁵ The increased number of migrants from high TB incidence countries in recent years challenges European countries efforts to end the TB epidemic.⁶

The WHO recommends systematic screening of immigrants for active TB by chest X-ray (CXR),⁷ and screening for LTBI if they are from countries with a high TB burden, either with a tuberculin skin test (TST) or an interferon-gamma release assays (IGRAs).⁸ The European Centre for Disease Prevention and Control (ECDC) recommends the use of CXR soon after arrival and a TST or an IGRA for all migrants from high TB incidence countries (defined as incidence >120 cases/100,000).⁹ These guidelines are based on recent data on the effectiveness of LTBI screening and treatment to reach TB targets in Europe.¹⁰⁻¹⁴

The TB notification rate in France was 7.6 cases/100,000 inhabitants in 2018 and 2019,^{15,16} with disparities between French regions. In addition, over the last years, incidence increased in the Paris region:^{16,17} incidence was 16.9/100,000 inhabitants in Paris and 26.4/100,000 inhabitants in Seine-Saint-Denis *département* in 2019. Immigrants represent now the majority of TB cases in France (66%).^{15,16}

Pre-entry screening concerns less than 50% of legal immigrants in France.¹⁸ Medical examination, including active TB screening, exists for legal immigrants when obtaining a first residence permit;¹⁹ but is more complex for student and the most vulnerable, i.e., undocumented migrants and asylum seekers.²⁰ The latter are received by non-medical staff that direct them to TB control centres. Students' screening is now the responsibility of university health services, not without failures.²¹ Screening of undocumented and others migrants relies mainly on TB control centres, healthcare access centres (PASS), non-governmental organisations (NGOs) and general practitioners (GPs).

Several guidelines regarding screening of TB among migrants have been issued in France over time (summarised in the Supplementary Data 1).^{19,22-28} Guidelines in force are screening for TB adults and children from high-incidence countries (defined after the conduct of our study as >40 cases/100,000²⁵) and this could be repeated annually up to 2 years following arrival.²⁶ Concerning LTBI, screening was recommended until 2019 only for children under 15 from high-incidence countries. An update was published after the conduct of our study, extending screening to the 15–18 years old coming from high-incidence countries, and to adults between 18 and 40 years old if they live with children under 18 years old and come from a

country with an incidence >100/100,000.²⁷ In addition, the French High Council for Public Health (Haut Conseil de la Santé Publique -*HCSP*-) recommends a health checkup within 4 months of arrival including TB screening for all migrants.²⁸

Little is known about the approach taken by primary and secondary care providers to screening and treatment, with which to inform service delivery and national policy. In two studies, conducted in Germany and in the UK,^{29,30} physicians practices often differ from national guidelines. In France, a previous study on physicians practices regarding TB treatment showed heterogeneity in practices.³¹ We found no published study conducted in France that looked at physicians' practices regarding TB and LTBI screening among migrants.

The aim of this study was to explore the current French physicians' practices concerning screening of migrants for both TB and LTBI to inform strengthening screening in this high-risk group.

MATERIALS/METHODS

Study design

We did an online national survey of a range of primary and secondary care French physicians regarding their practices in relation to TB screening among migrants (defined as all born outside France), with the survey disseminated by the French Infectious Diseases Society (Société de Pathologie Infectieuse de Langue Française -*SPILF*-) through scientific societies and networks.

Setting

The study was conducted between April 2017 and May 2018, using a self-administered semi-structured online questionnaire, composed of 28 questions that addressed TB/LTBI policy, practice, and treatment options.

Participants

All physicians involved in migrant care were eligible. The questionnaire was sent by email through partner scientific societies, physicians associations and networks : the Tuberculosis centres network, the *SPILF* mailing list, the GP therapeutic training society research group (Société de Formation Thérapeutique du Généraliste -*SFTG*- recherche), the primary care monitoring and research network *Sentinelles*, the national healthcare access centres collective (*collectif PASS*), *Médecins du monde* –a French non-governmental organisation (NGO) - network, the French Travel Medicine Society (*SMV*) and the French AIDS Society (Société Française de Lutte contre le Sida -*SFLS*-) mailing list. The study intended to target 300

participants practicing in different settings to have a power of 80% to highlight a difference of 20% on the TB systematic screening practice and to highlight determinants. Answers were collected anonymously using www.wepi.org, an Epiconcept® (Epiconcept, Paris, France) website accredited to host personal health data by the shared healthcare information systems French agency (ASIP Santé).

Variables

The questionnaire was co-constructed by the members of the French Infectious Disease Society (SPILF) working group on prevention of infectious diseases among migrants. Single and multiple-choice questions were asked on TB and LTBI screening for migrants in France. Data on practitioners profiles were collected: age, sex, region, professional status, speciality and form of medical practice (general practice, hospital, health care access centres, non-governmental organisations, etc.), and experience in migrant care.

Statistical approach

Data were analysed using Stata v13 (StataCorp, College Station, TX, USA). Answers were compared according to physicians practice area and the three categories of physicians surveyed: primary care physicians (private doctors and health centre employees, physicians working in health care access centres and non-governmental organisations), TB specialists in secondary care (pulmonologists, physicians working in TB control centres, specialists in infectious diseases and internal medicine) and others physicians. To compare percentages, we used χ^2 or Fisher's Exact tests, as appropriate. When data for an indicator were missing, the denominator is specified in brackets in the results section. Univariate and multivariate analyses were performed using logistic regression models. A *P* value of <0.2 in the univariate analysis was used to select variables for inclusion in the multivariate model. Participants' age and sex were also included, as they were deemed to be useful adjustment variables.

Ethics and regulation

Data were collected in a strictly anonymous manner; participants provided informed consent for data collected online on the accredited website wepi.org. Data collection was subjected to an impact analysis in accordance with the General Data Protection Regulation, complies with the Jardé law³² and has been approved by the institutional review board of the French-speaking infectious pathology society (Société de Pathologie Infectieuse de Langue Française -SPILF-).

RESULTS

The questionnaire was sent to 6 groups, 4 societies and 3066 individual physicians. We received 374 responses (response rate: 12.2%). Three questionnaires were removed because of missing information, and four because they were filled out by other professionals.

Respondents' characteristics are given in Table 1. Respondents included 195 (53.1%) primary care physicians, 126 (34.3%) TB specialists in secondary care and 46 (12.5%) other physicians. The majority ($n = 303$, 85.3%) felt that they had sufficient experience in migrant care.

Active TB screening

Respectively 84.8% (296/349), 71.9% (251/349) and 38.4% (134/349) recommended screening for TB using CXR in migrants from high- (defined as >100 cases/100,000), medium- (50–100/100,000) and low-incidence (<50 /100,000) countries. Univariate and multivariate analyses for medium-incidence countries are shown in Table 2. About 14.0% (49/300) of respondents said that they did not know who should be screened, generally primary care physicians (22% vs. 4%, $P < 0.001$). Compared to others, physicians working in TB control centres and pulmonologists were twice as likely to extend screening to low TB incidence regions (74.3% vs. 34.4%, $P < 0.001$). One in two physicians (174/349, 49.9%) decided to screen migrants even if they were from low-incidence countries, regardless of the physician's practice type.

Information about timing and practical conditions of screening are given in Table 3. The vast majority of physicians recommended screening as soon as possible, although this was less often the case among primary care physicians; some preferred newly arrived migrants to be to be first properly accommodated. Although consent is always obtained prior to any screening, it is interesting to note that 18.1% of the participants emphasised the importance of obtaining consent as a pre-condition for screening; this was more common among primary care physicians.

Only 55.6% of respondents considered screening prescriptions to be their responsibility; those who did not think screening was their responsibility felt that it should be done by TB control centres (69.4%). Furthermore, 43.6% (152/349) considered CXR screening should be done directly in migrant camps or settlements. Use of radiology-equipped mobile units where migrants lived was more likely to be recommended by physicians working in the Paris region (51.7% vs. 38.1%, $P = 0.01$). Of the TB control centre physicians who responded, 55.9% recommended screening at settlements, even illegal ones, and 58.8% the use of radiology-equipped units where migrants lived.

When apical calcific sequelae were found on CXR in asymptomatic patients without history of TB treatment, 72.0% (255/354) ordered additional tests (45.2% ordered computed tomography scans, 28.5% sputum analysis, 11.6% gastric aspirate and 39% TST or IGRA); 2.8% (10/354) offered a follow-up alone, and overall 51.7% (183/354) asked for specialist advice. Ten (2.8%) physicians said that they would use quadruple therapy if there was no history of treatment (and no idea of time elapsed since disease), but they also asked for additional tests. Only one agreed to treat without asking for any microbiology examinations.

LTBI screening

Physicians were asked which people from high-incidence countries they screen for LTBI: 220/356 (61.8%) said they would recommend screening in children aged <15 years, 121/356 (34.0%) in children and adults, 20.9% (65/356) on a case-by-case basis and 4.2% said that they would not screen migrants. In multivariate analysis, primary care physicians and physicians working in the Paris region were less likely to screen children under 15 years (Table 4). The same association with the Paris region was observed in case of LTBI screening among all migrants, adults and children (Table 5). Furthermore, pulmonologists/TB control centre physicians were less likely to extend screening to all migrants (5/35, 14.3% vs. 116/321, 36.1%; $P = 0.01$).

In case of LTBI-screened children from high-incidence countries with a positive result, 88.1% (185/210) of physicians recommended treatment, 11.4% (24/210) offered follow-up without treatment, and one recommended neither treatment nor follow-up. No significant differences according to physician speciality, age or sex were observed. In terms of treatment, 94.6% (175/185) of respondents said that they would treat using a 3-month isoniazid + rifampicin regimen and 5.4% (10/185) with a 6-month isoniazid monotherapy.

DISCUSSION

This first nationwide study gives insights into physicians' practices in France regarding active TB and LTBI screening among migrants. Although adherence to systematic TB screening is relatively high among migrants from high-incidence countries, this study shows heterogeneity among physician practices, and contradictory attitudes concerning LTBI screening.

Even though TB screening was common, a significant proportion of physicians either did not know who should be screened or did not offer systematic CXR screening. French physicians less involved in migrant care were less likely to screen. This is a flaw in the TB control policy in France. While national guidelines recommend systematic screening, the

definition of “high-incidence countries” varies, and the HCSP have only recently set a precise threshold²⁵ (Supplementary Data 1). A synthesis and harmonisation of guidelines would help physicians. This also raises the issue of physicians training needs. Training courses for the promotion of TB screening also led to enhanced TB and LTBI identification.³³

On the other hand, we found that some TB specialists at the secondary care level go beyond guidelines and extend screening for active TB to low-incidence countries. This could be explained by personal case experience or because they are more concerned about migration conditions and living conditions in France.

In multivariate analysis, we found that primary care physicians were less likely to prescribe screening even if they were involved in migrant care. Less than one primary care physician out of two considered prescribing screening their responsibility; some considered this to be a matter for TB control centres. Acceptability of CXR was found to be good among migrants.³⁴ More communication between TB control centres and primary care physicians, and better information and awareness on updated guidelines and public health issues are necessary for better TB preventive policies.

TB specialists in secondary care are more likely to recommend the use of mobile radiology units to reach migrants where they live, including illegal camps, as there are many camps occupied by undocumented migrants, asylum seekers or Roma people in France. A review showed that occasional screening of specific high-risk groups, including undocumented migrants, lead to the highest yields.³⁵

Among physicians working in TB control centres, only a little over one in two recommended screening in settlements or the use of radiology-equipped units where migrants lived, which highlights the incorrect approach taken by French TB control centres to target hard-to-reach patients. This may be explained by lack of finance for such actions but also by the absence of an outreach culture in France.

The vast majority of physicians did not consider that waiting for the immigration services to screen migrants was satisfactory. Indeed, according to guidelines, medical examination of documented migrants should be performed within 4 months of arrival, but in practice can take much longer and only covers a small proportion of legal migrants.²⁸

Many physicians performed a TST/IGRA in the presence of radiographic evidence of previous TB, when they are not recommended.³⁶

Studies have shown that most TB cases among foreign-born people are not imported active TB but reactivation of remotely acquired LTBI.³ LTBI screening and TB preventive treatment (TPT) in migrants from high TB burden countries, especially among the young, has

proven to be effective in preventing TB reactivation.³⁷ This has been recommended by the WHO as guidance since 2015.³⁸ However, despite recommendations by international, European and national guidelines, LTBI screening is often not performed. Pareek et al. found that only 107 (60.4%) primary care organisations in the United Kingdom screened new entrants for LTBI.²⁹ According to Gutsfeld et al.,³⁰ physicians in Germany treated only 25% of migrants with a positive TST and/or IGRA result. At the time of our study, the French guidelines recommended LTBI screening only in migrants under 15 years from high-incidence countries. Almost 40% of respondents (who were more likely to be GPs) did not follow these guidelines despite working in migrant care. We can therefore assume this proportion is even higher in the general population of physicians.

Because of the impossibility to date TB infection in migrants, and therefore, the risk of reactivation, TPT in migrants is still controversial in France. This may explain physicians' hesitancy in this regard. Other barriers, such as TPT refusal by asymptomatic people, poor healthcare access,³⁹ and having other priorities (administrative procedures) lead to low TPT completion rates,¹¹ which may account for non-adherence to LTBI screening guidelines. These barriers must be addressed in order to increase TPT uptake.

To note, screening new entrants for LTBI in primary care high-burden organisations in the United Kingdom was less frequent.²⁹ In our study, in both multivariate analyses for screening LTBI in children under 15 years and in all migrants from high-incidence countries, physicians working in the Paris region were less likely to prescribe it. This could be explained by the heavy physician workload in this area due to the higher number of migrant cases in the Paris region, and the focus on the follow-up of active TB and investigations rather than on prevention.

Our study had several limitations. As this study is based on declarative information, it is possible that actual behaviour differs from the stated attitudes. The questionnaire was sent to physicians working in the field of infectious diseases and migrant health and the response rate was 12% (without the possibility of quantifying duplicates). General practitioners and physicians working in TB control centres were under-represented in our study. Extrapolation of the results obtained for physicians involved in migrant care to all physicians should therefore be done with caution.

Despite these limitations, this is the first survey on physician practices regarding TB and LTBI screening among newly arrived migrants in France. As the use of screening is limited among physicians involved in migrant care, we can assume that this is even lower among physicians in general.

In conclusion, we found heterogeneous practices with regard to screening of both TB and LTBI, probably due to lack of knowledge, and the lack of adherence to systematic LTBI treatment policy. Systematic screening of active TB in newly arrived migrants should be reinforced. It includes TB control centres targeted screening operations and raising awareness about the role of all physicians in prescribing a CXR and TST/IGRA if indicated, ideally as part of a nationally funded migrant health workup. Physicians in France also seem to lack of outreach approaches to screening migrants. LTBI screening and TPT in newly arrived migrants is a new axis in TB control policies that needs to be developed in France. Harmonisation and synthesis of different national guidelines concerning TB and migrant health would also help physicians to better apply existing guidelines.

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Conflicts of interest: none declared.

Availability of data and material: All relevant data for our analyses are fully described in the paper and can be made available on request.

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Table 1 Characteristics of participants

	Respondents		
	<i>n</i>	<i>n</i>	%
Total	367		
Sex	367		
Male		131	35.7
Female		236	64.3
Age, years, median [IQR]	363	42 [35–56]	
Region	358		
Paris region		157	43.9
Other regions		201	56.1
Type of medical practice (multiple answers possible)	367		
GP with a liberal mode of practice		110	30.0
GP employed at a health centre		51	13.9
GP employed at a healthcare access centre (<i>Permanence d'Accès aux Soins de Santé</i>) for people without health insurance coverage		75	20.4
Volunteer doctor in NGOs for migrant care		27	7.4
Free and anonymous screening and diagnostic and screening centre for HIV, STDs, hepatitis and TB (<i>Centre Gratuit d'Information de Dépistage et de Diagnostic du VIH, des hépatites et des IST</i>)		75	20.4
Free vaccination centres		60	16.4
International vaccination and travel medicine centres		52	14.2
TB control centres (<i>Centre de Lutte Anti-Tuberculose</i>)		36	9.8
Paediatricians/mother and child health centres (<i>Protection Maternelle et Infantile</i>)		23	6.3
Internal medicine services		16	4.4
Infectious disease and tropical medicine services		87	23.7
Public health units		5	1.4
Hospital city networks		11	3.0
Other		38	10.4
TB prevention in migrants part of routine practice	365		
Yes		312	85.5
No		53	14.5
Level of experience in migrant care	355		
Beginner		52	14.7
Mid-level		193	54.4
Experienced and experts		110	31.0

IQR = interquartile range; GP = general practitioner; NGO = non-governmental organisation.

Table 2 Physicians prescription of systematic screening for active TB in newly arrived migrants from medium-incidence countries (defined as 50–100 cases/100,000)

	<i>n/N</i>	%	<i>P</i> value	Univariate			Multivariate		
				OR	95% CI	<i>P</i> value	aOR	95% CI	<i>P</i> value
All	349	71.9					(n = 330)		
Sex	349								
Male	93/124	75.0	0.34	Reference					
Female	158/225	70.2		0.79	[0.48–1.29]	0.34	0.61	[0.35–1.07]	0.09
Age group, years	346								
<45	141/186	75.8	0.07	Reference					
≥45	107/160	66.9		0.64	[0.40–1.03]	0.07	0.50*	[0.29–0.85]*	0.01*
Region	340								
Paris	100/148	67.6	0.16	0.71	[0.45–1.15]	0.16	0.75	[0.44–1.27]	0.28
Others	143/192	74.5		Reference					
Care settings	349								
Primary care physicians	115/188	61.2	<0.001	0.22	[0.12–0.41]	<0.001	0.23*	[0.12–0.45]*	<0.001*
TB specialists in secondary care	107/122	87.7		Reference					
Other	29/39	74.4		0.41	[0.17–1.00]	0.05	0.47	[0.18–1.24]	0.24
Migrant care experience	341								
Beginners	31/50	62.0	0.015	0.36	[0.17–0.76]	0.008	0.58	[0.24–1.44]	0.24
In the average	129/185	69.7		0.50	[0.28–0.90]	0.02	0.70	[0.37–1.35]	0.29
Experienced and expert	87/106	82.1		Reference					
Migrant care daily practice	349								
Yes	223/298	74.8	0.003	2.44	[1.33–4.50]	0.004	2.02	[0.97–4.20]	0.06
No	28/51	54.9							

* Statistically significant.

OR = odds ratio; CI = confidence interval; aOR = adjusted OR.

Table 3 Physicians opinions on implementation of active TB screening among migrants in France, 2017–2018*

	All (<i>n</i> = 367) <i>n</i> (%)	Care setting			<i>P</i> value
		Primary care physicians (<i>n</i> = 195) <i>n</i> (%)	TB specialists in secondary care (<i>n</i> = 126) <i>n</i> (%)	Others (<i>n</i> = 46) <i>n</i> (%)	
Timing of screening	332	175	119	38	
As soon as possible	290 (87.4)	145 (82.9)	110 (92.4)	35 (92.1)	0.03 [†]
Wait 2 years after arrival	3 (0.9)	2 (1.14)	1 (0.84)	0(0)	0.79
Wait until accommodation is provided	48 (14.5)	27 (15.4)	17 (14.3)	4 (10.5)	0.74
Get consent for treatment before screening	60 (18.1)	41 (23.4)	13 (10.9)	6 (15.8)	0.02 [†]
Practical considerations	349	186	122	41	
Prescription for screening is the respondent's responsibility	194 (55.6)	98 (52.7)	71 (58.2)	25 (61.0)	0.48
Screening in illegal camps is a good idea	152 (43.6)	73 (39.2)	58 (47.5)	21 (51.2)	0.21
Screening should be done by TB control centres	198 (56.7)	92 (49.5)	80 (65.6)	26 (63.4)	0.01 [†]
Screening should be done in camps using a mobile radiology unit	154 (44.1)	67 (36.0)	67 (54.9)	20 (48.8)	0.004 [†]
Screening should be done in the general health system	163 (46.7)	90 (48.4)	57 (46.7)	16 (39.0)	0.55
Screening can wait until medical examination by the Immigration Office	28 (8.0)	15 (8.1)	10 (8.2)	3 (7.3)	0.98
Screening of students should be performed by the preventive medicine departments of universities	92 (26.4)	36 (19.3)	43 (35.3)	13 (31.7)	0.006 [†]

*Medical examinations of legal immigrants (except asylum seekers and students) should be performed by the Immigration Office within 4 months after arrival in France; however, in practice this can take much longer. Asylum seekers has to be examined by a “GP of their choice”, but in practice there are barriers to accessing healthcare, and a recent French law has moved the responsibility for screening students from the Immigration Office to the universities’ preventive medicine departments, which do not have the staff or the organisation to handle the problem.

[†] Statistically significant.

Table 4 Physician's prescription for systematic screening for TB infection in migrant children aged <15 years from high-incidence countries (defined as >100 cases/100,000)

	<i>n/N</i>	%	<i>P</i> value	Univariate			Multivariate		
				OR	95% CI	<i>P</i> value	aOR	95% CI	<i>P</i> value
All	356	61.8					(n = 345)		
Sex	356								
Male	78/127	61.4	0.91	Reference					
Female	142/229	62.0		1.03	[0.66–1.60]	0.91	0.99	[0.61–1.59]	0.95
Age group, years	353								
<45	123/190	64.7	0.26	Reference					
≥45	96/163	58.9		0.78	[0.51–1.20]	0.26	0.75	[0.48–1.19]	0.22
Region	347								
Paris	76/151	50.3	<0.001	0.45	[0.29–0.69]	<0.001	0.45*	[0.28–0.71]*	0.001*
Other	136/196	69.4		Reference					
Care settings	356								
Primary care physicians	98/190	51.6	<0.001	0.36	[0.22–0.58]	<0.001	0.34*	[0.20–0.57]*	<0.001*
TB specialists in secondary care	93/124	75.0		Reference					
Other	29/42	69.1		0.74	[0.34–1.61]	0.45	0.67	[0.30–1.49]	0.33
Experience	348								
Beginners	31/52	59.6	0.86	0.83	[0.42–1.65]	0.60			
Mid-level	116/188	61.7		0.91	[0.56–1.49]	0.71			
Experienced and experts	69/108	63.9		Reference					
Routine practice	356								
Yes	187/303	61.7	0.94	0.98	[0.53–1.78]	0.94			
No	33/53	62.3		Reference					

* Statistically significant.

OR = odds ratio; CI = confidence interval; aOR = adjusted OR.

Table 5 Physician's prescription of systematic screening for TB infection of all newly arrived migrants (adults and children) from high-incidence countries (defined as >100 cases/100,000)

	<i>n</i>	%	<i>P</i> value	Univariate		Multivariate			
				OR	95% CI	<i>P</i> value	aOR	95% CI	<i>P</i> value
All	356	34.0					(<i>n</i> = 345)		
Sex	356								
Male	44/127	34.7	0.85	Reference					
Female	77/229	33.6		0.96	[0.61–1.51]	0.85	1.00	[0.62–1.61]	0.99
Age group, years	353								
<45	59/190	31.1	0.21	Reference					
≥45	61/163	37.4		1.33	[0.85–2.07]	0.21	1.36	[0.86–2.16]	0.19
Region	347								
Paris	35/151	23.2	<0.001	0.43	[0.27–0.69]	<0.001	0.43*	[0.27–0.69]*	0.001*
Other	81/196	41.3							
Care settings	356		0.83						
Primary care physicians	64/190	33.7		1.03	[0.64–1.66]	0.91	/	/	/
TB specialists in secondary care	41/124	33.1		Reference					
Other	16/42	38.1		1.25	[0.60–2.58]	0.55	/	/	/
Experience	348								
Beginners	19/52	36.5	0.66	1.31	[0.65–2.63]	0.45	/	/	/
Mid-level	66/188	35.1		1.23	[0.74–2.04]	0.43	/	/	/
Experienced and experts	33/108	30.6		Reference					
Part of daily practice	356								
Yes	98/303	32.3	0.12	0.62	[0.34–1.13]	0.12	0.75	[0.40–1.39]	0.36
No	23/53	43.4		Reference					

* Statistically significant.

OR = odds ratio; CI = confidence interval; aOR = adjusted OR.

RÉSUMÉ