

WHO child and adolescent TB working group

Hyderabad, 30 October 2019

TB screening in migrant children

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Overview

Migrant children current data (Europe)

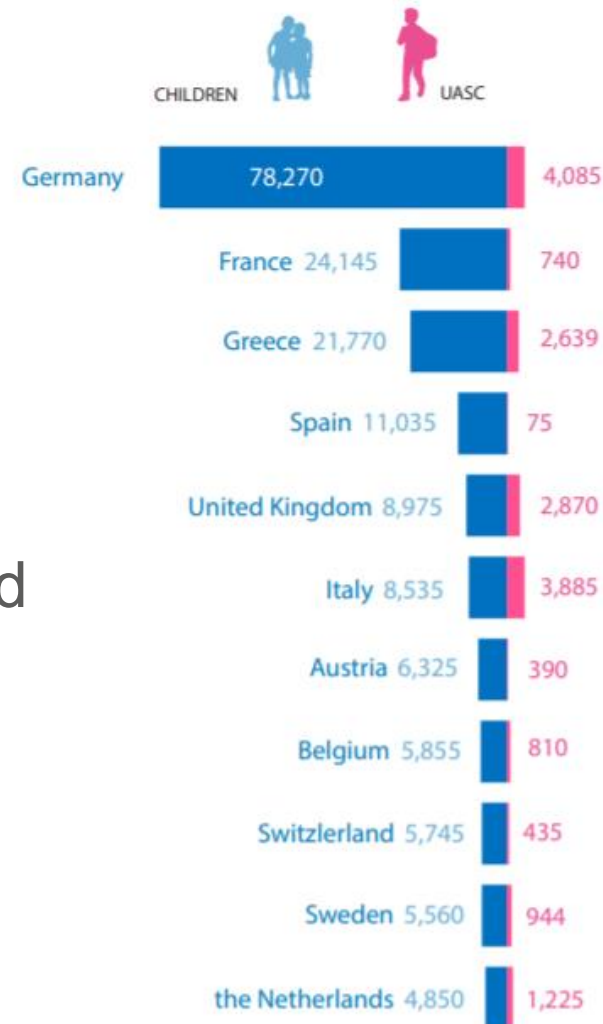
Health status in migrants with focus on TB

**Screening practices in migrants for
LTBI and aTB**

Challenges for TB management in migrants

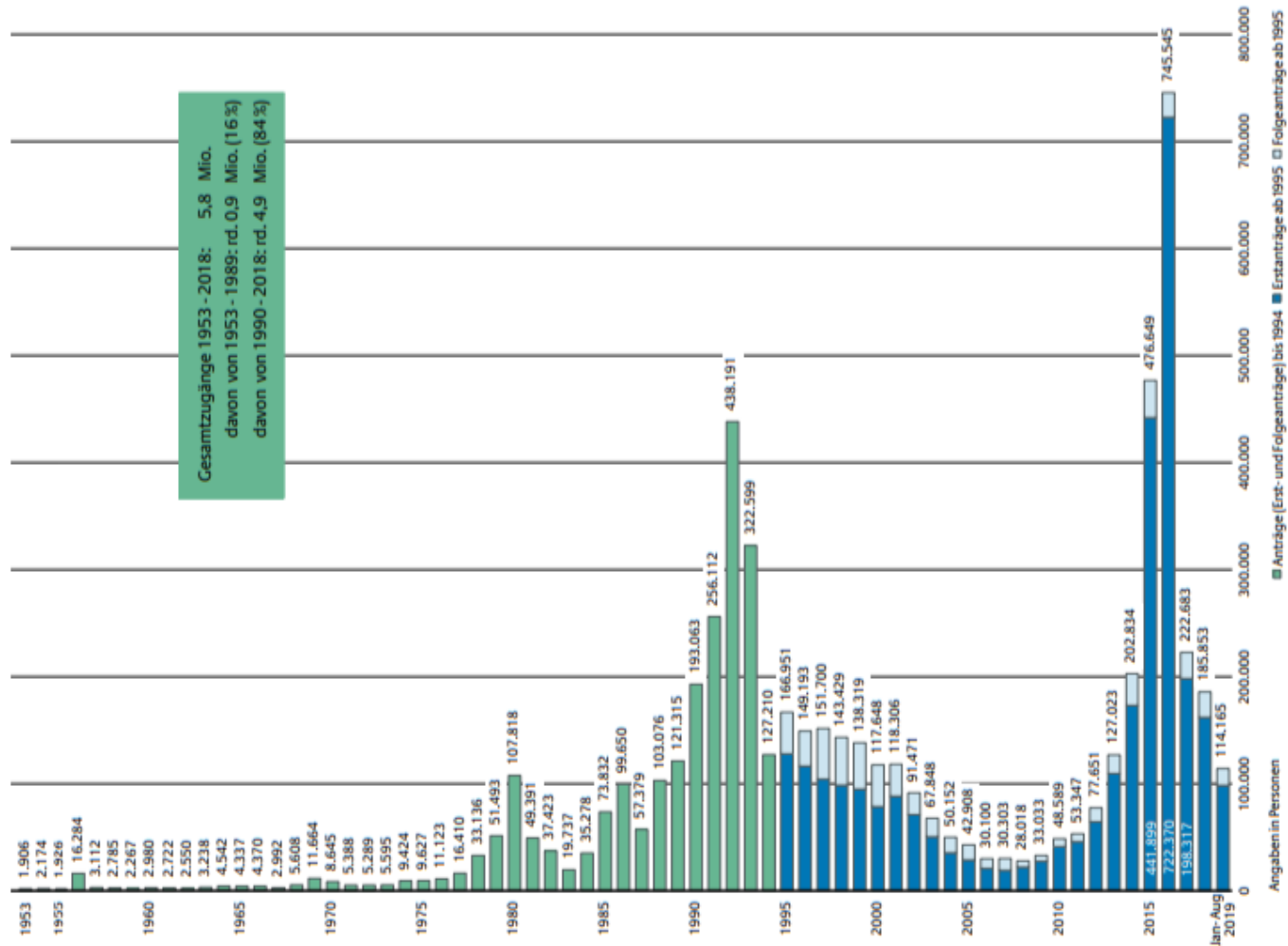
2018 refugee data in Europe

- > 600'000 arrival of asylum seekers
1/3 < 18 years of age
- 191'360 paediatric arrivals
of which 20'325 unaccompanied
- > 50% from
Syria, Iraq, Afghanistan, Eritrea



German data in last 50 years

Entwicklung der jährlichen Asylantragszahlen seit 1953



The journeys of refugee children to Europe

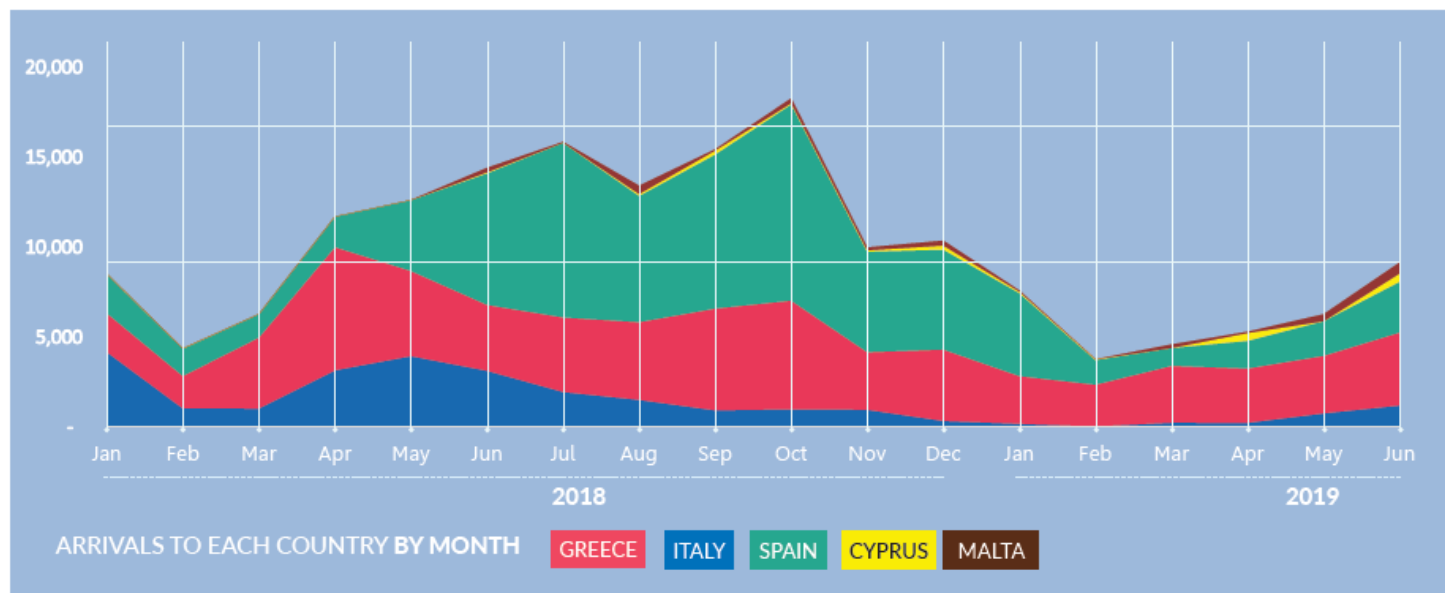
- In 50% route > 6 months
- 21% report being held in locations against their will
- Many report to have been forced to work, had lack of food

Arrivals 2019 in mediterranen countries

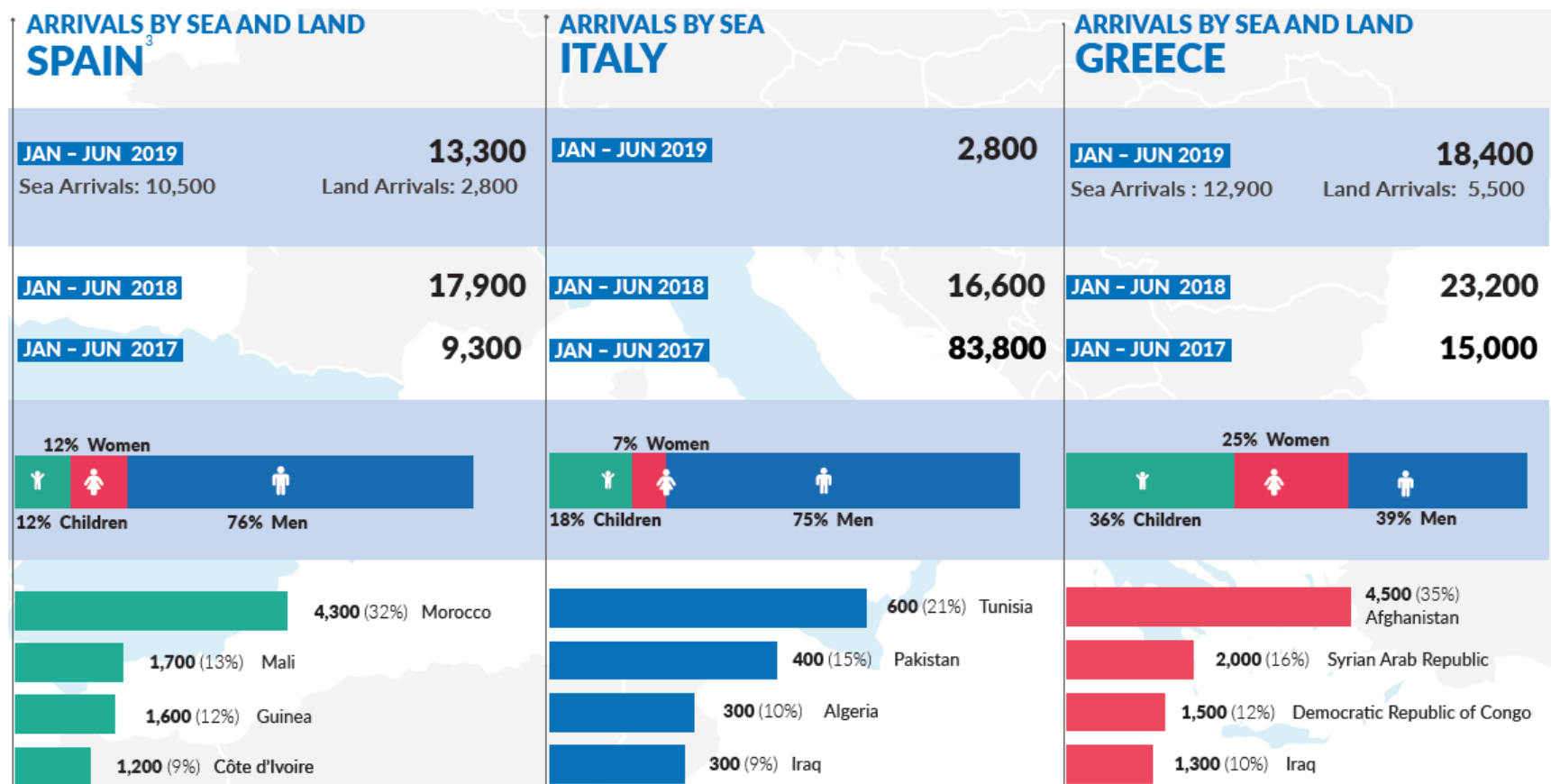
REFUGEE & MIGRANT ARRIVALS TO EUROPE IN 2019 (MEDITERRANEAN)

TOTAL ARRIVALS¹ (Jan-Jun 2019)

2019	37,100
	(Jan-Jun, 2019)
2018	58,000
	(Jan-Jun, 2018; total for 2018: 141,500)
2017	108,300
	(Jan-Jun, 2017; total for 2017: 185,100)
2016	235,300
	(Jan-Jun, 2016; total for 2016: 373,700)
2015	153,800
	(Jan-Jun, 2015; total for 2015: 1,032,400)



Age and country of origin variable



Overview

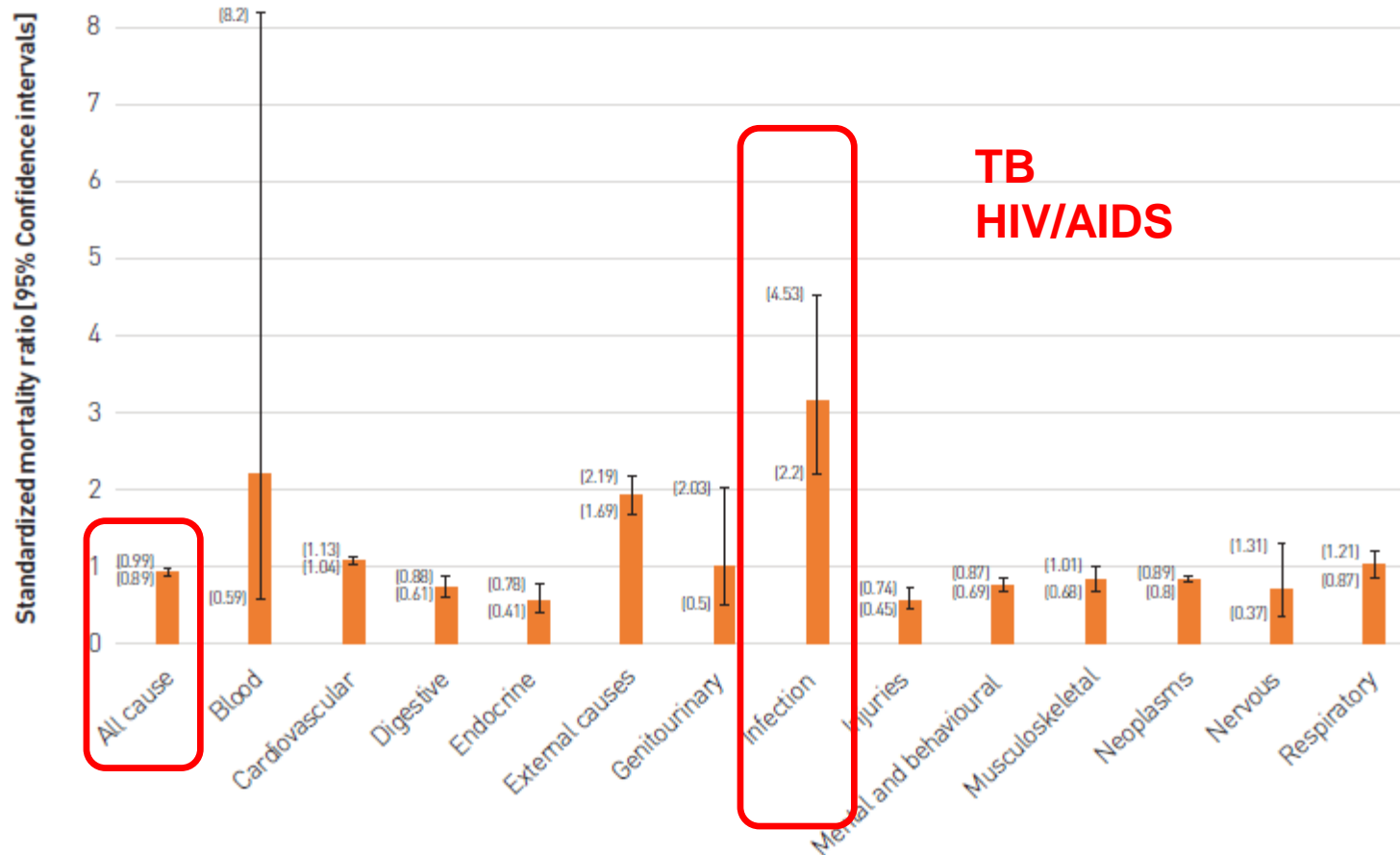
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Health status in migrants with focus on TB

Screening practices in migrants for
LTBI and aTB

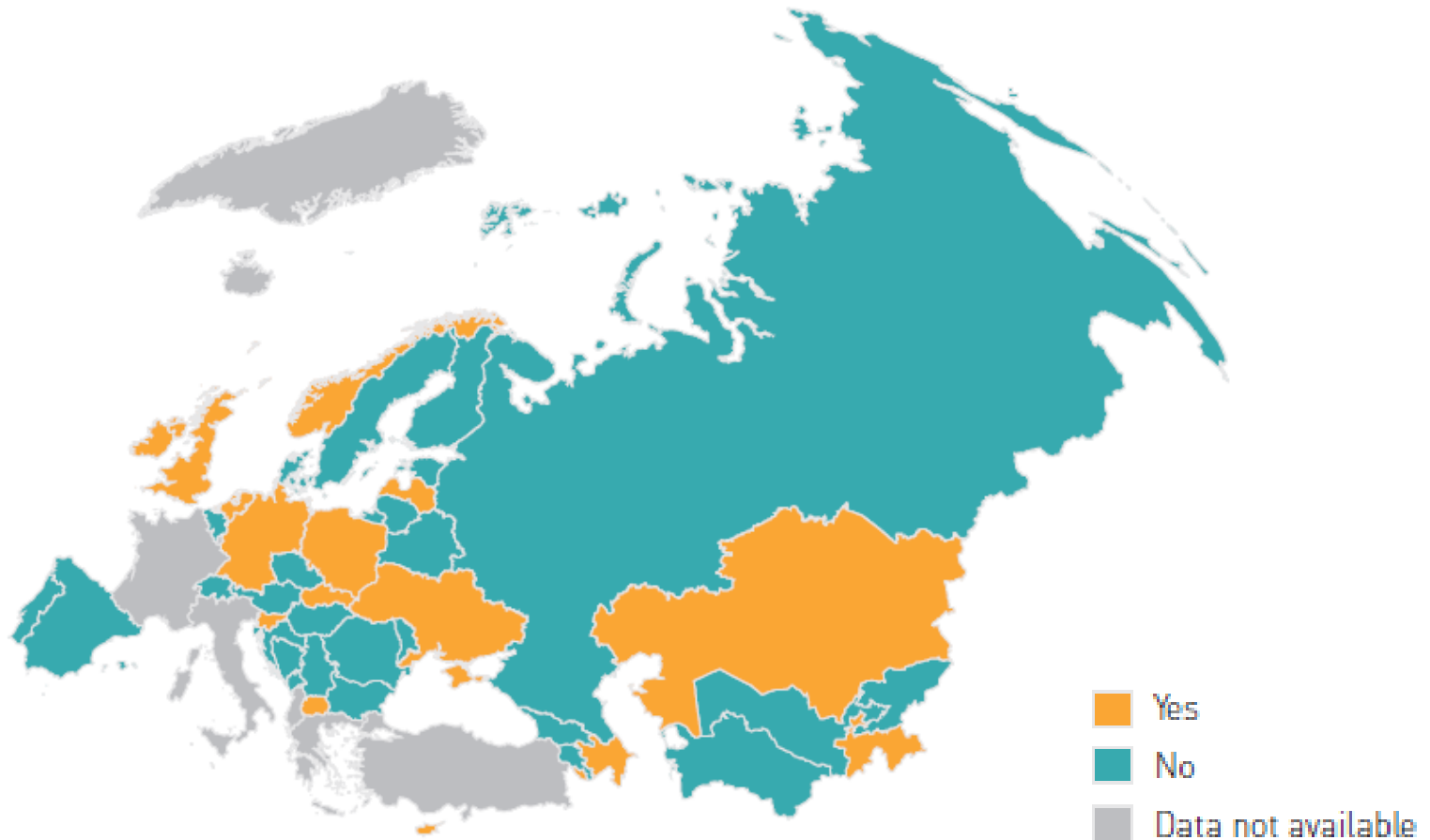
Challenges for TB management in migrants

Health status of migrants: mortality

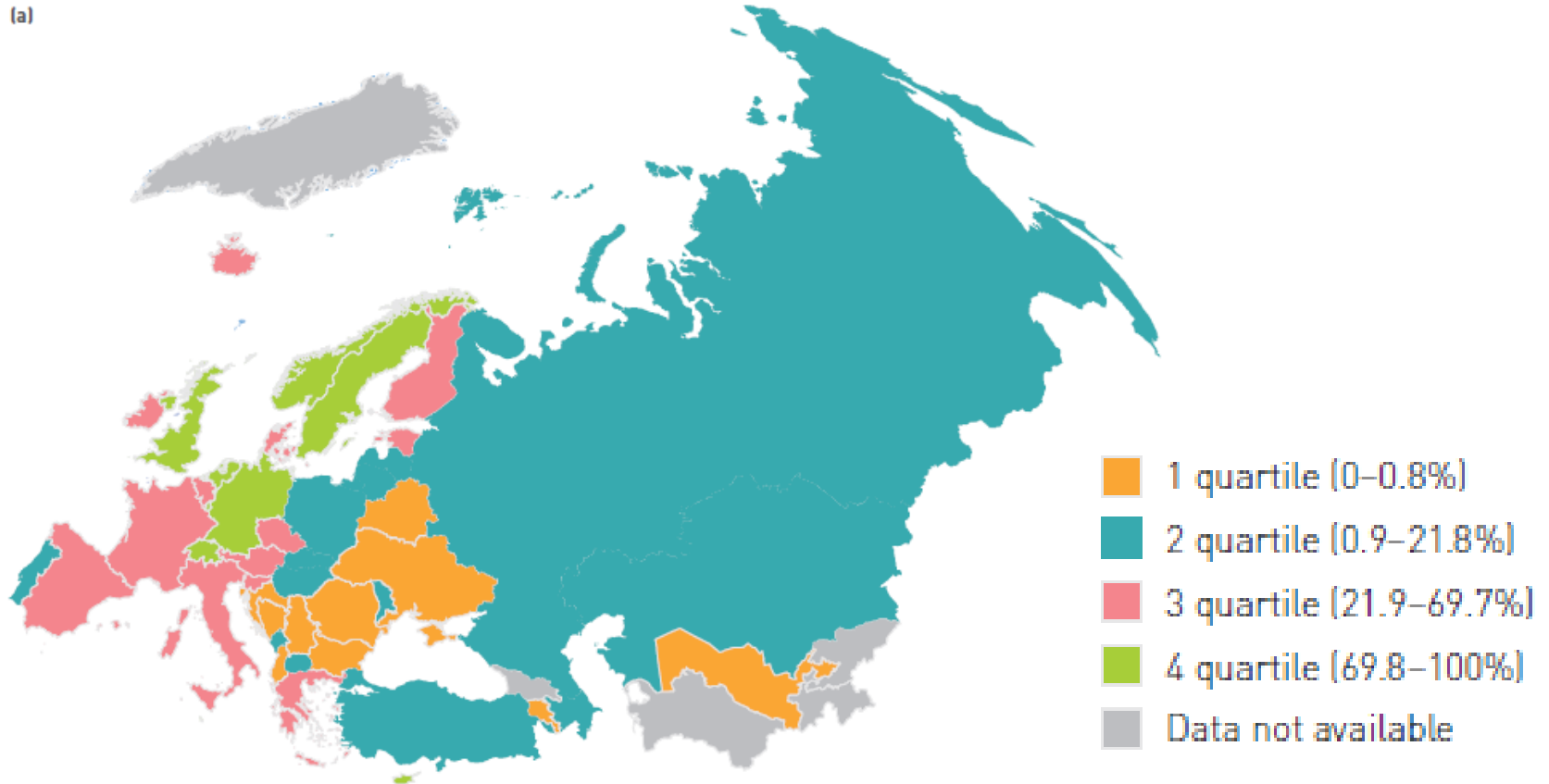


All-cause mortality and International Classification of Diseases 10th revision

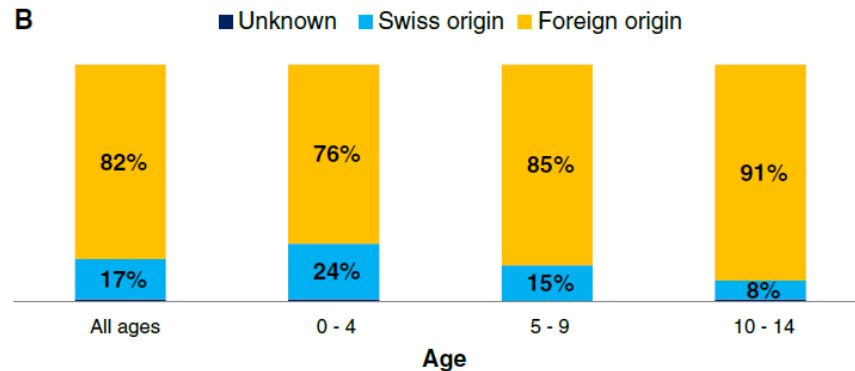
What do we know about TB of migrant children in the Europe region?



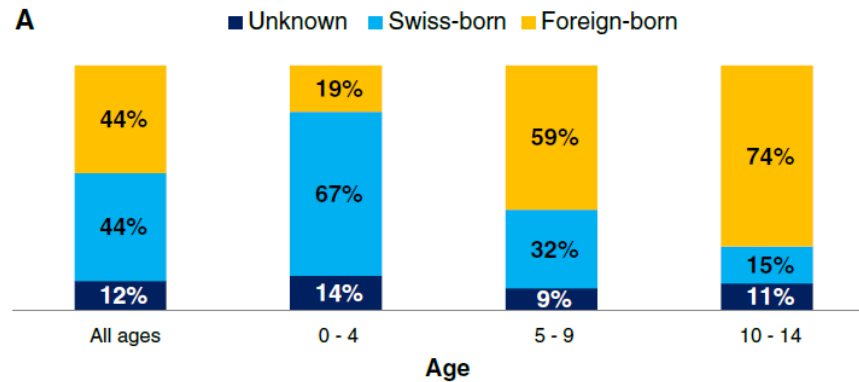
TB is a disease of foreign origin



TB in migrant children in Switzerland



County of origin



County of birth

TB in refugees children globally

- Systematic review, studies from Jan 2007- April 2018
- Observational studies from countries, regions, reception centers

Table 1 Reception countries of refugee children

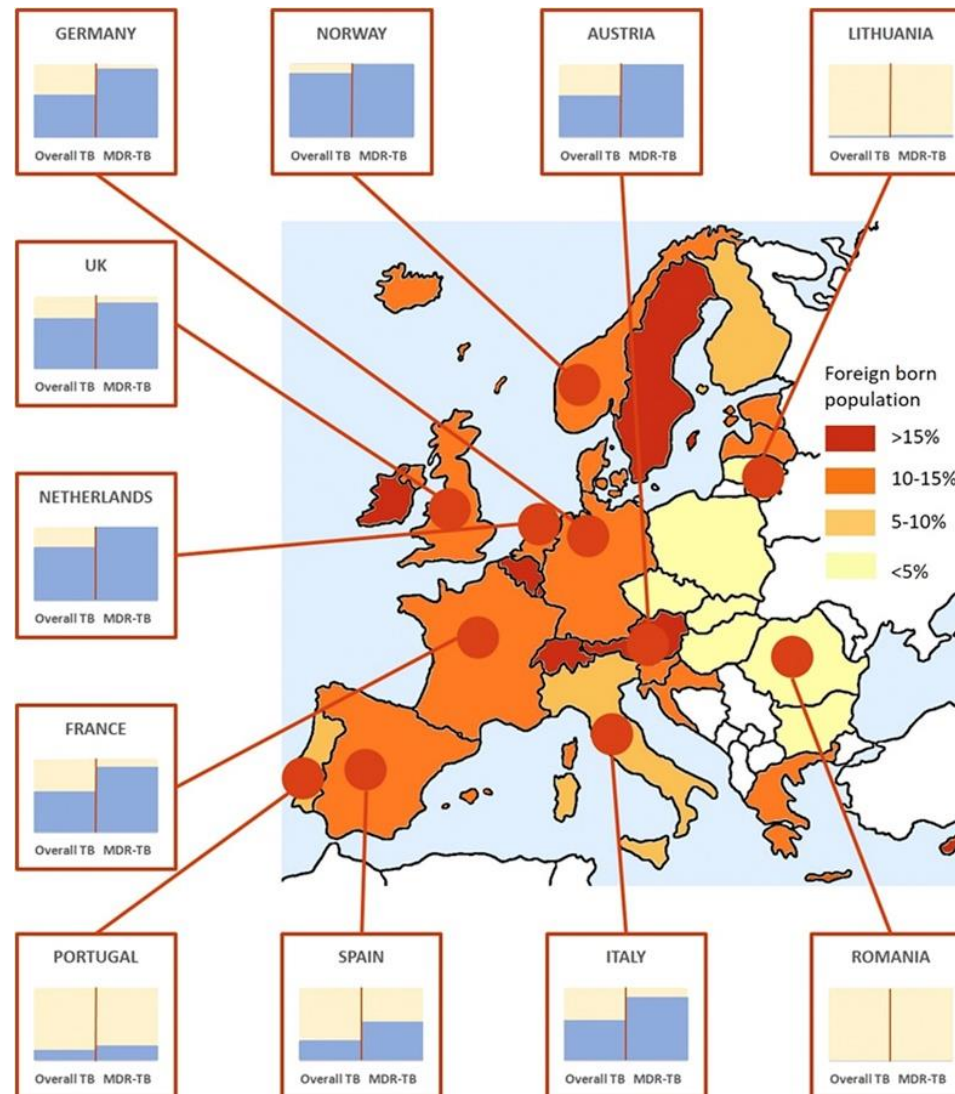
Countries	Studies	n=223 037
Australia	8	3497
Canada	4	1361
Germany	6	3816
Malta	1	277
New Zealand	2	763
Spain	2	373
Netherlands	2	257
UK	2	34 197
USA	26	178 496

TB in refugee children globally

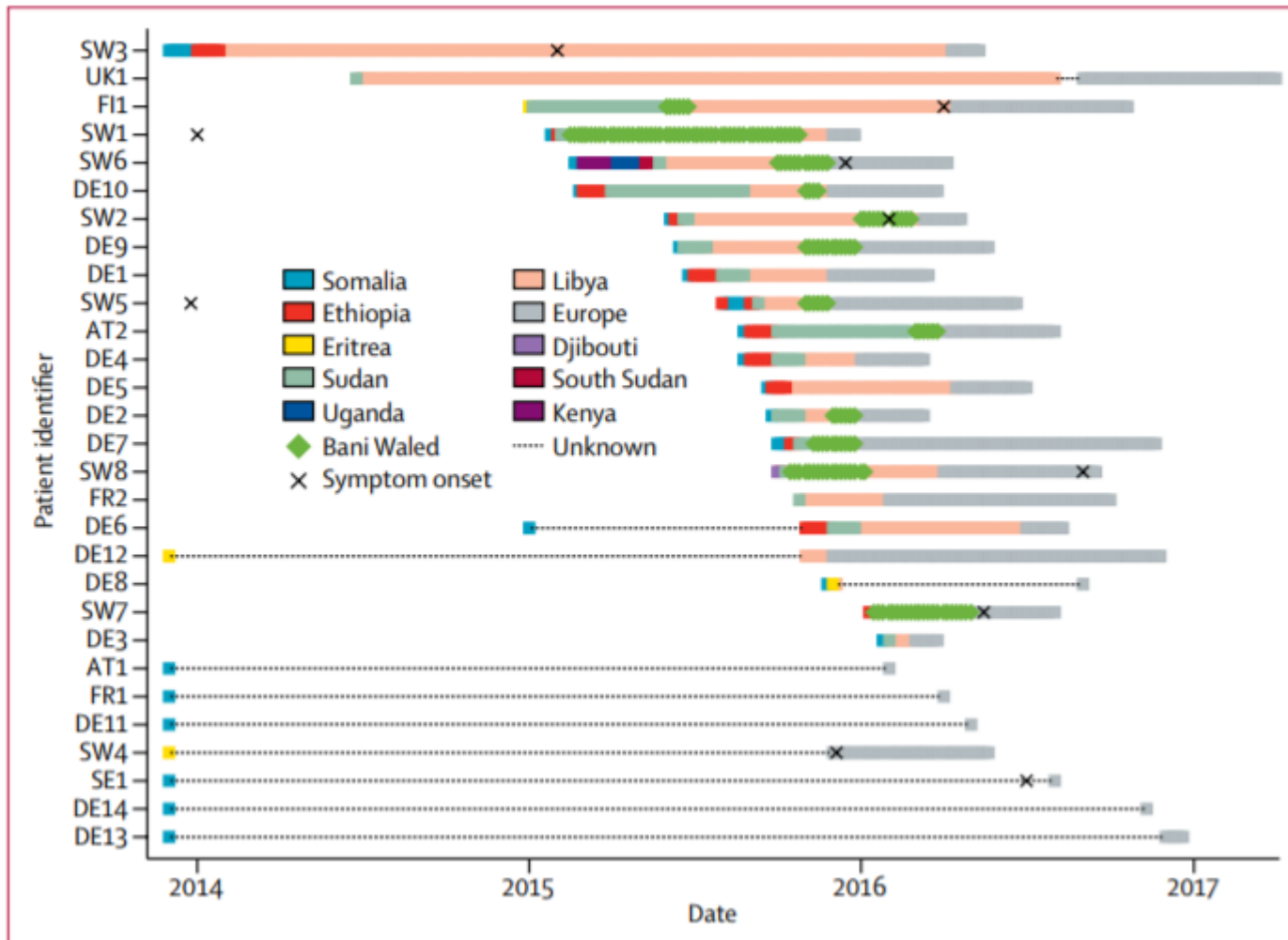
	Prevalence estimates, % 95% CI		Studies, n	Participants, n
Anaemia and genetic disorders of the red blood cells				
Anaemia	13.7	(8.7 to 19.7)	14	14 632
Haemoglobinopathy	3.7	(0.2 to 10.5)	4	5400
Infectious diseases				
Hepatitis B	2.6	(1.6 to 3.7)	16	19 196
Hepatitis C	0.2	(0.0 to 1.2)	5	1415
HIV	0.03	(0.00 to 0.25)	4	2165
Active TB	0.2	(0.0 to 0.5)	10	162 100
LTBI (IGRA)	11.3	(9.4 to 13.3)	4	3291
LTBI (Mantoux)	19.3	(11.0 to 29.3)	8	33 317
Schistosomiasis	9.5	(5.6 to 14.4)	10	3292
Strongyloides	10.4	(4.8 to 17.7)	8	3793
Intestinal infections	31.0	(22.1 to 40.6)	15	12 723
Malaria	2.58	(0.7 to 5.4)	6	2408

- Higher rates if migrants were from African continent compared to Middle East and Asia

TB and MDR TB in migrants in Europe



MDR-TB acquired during journey



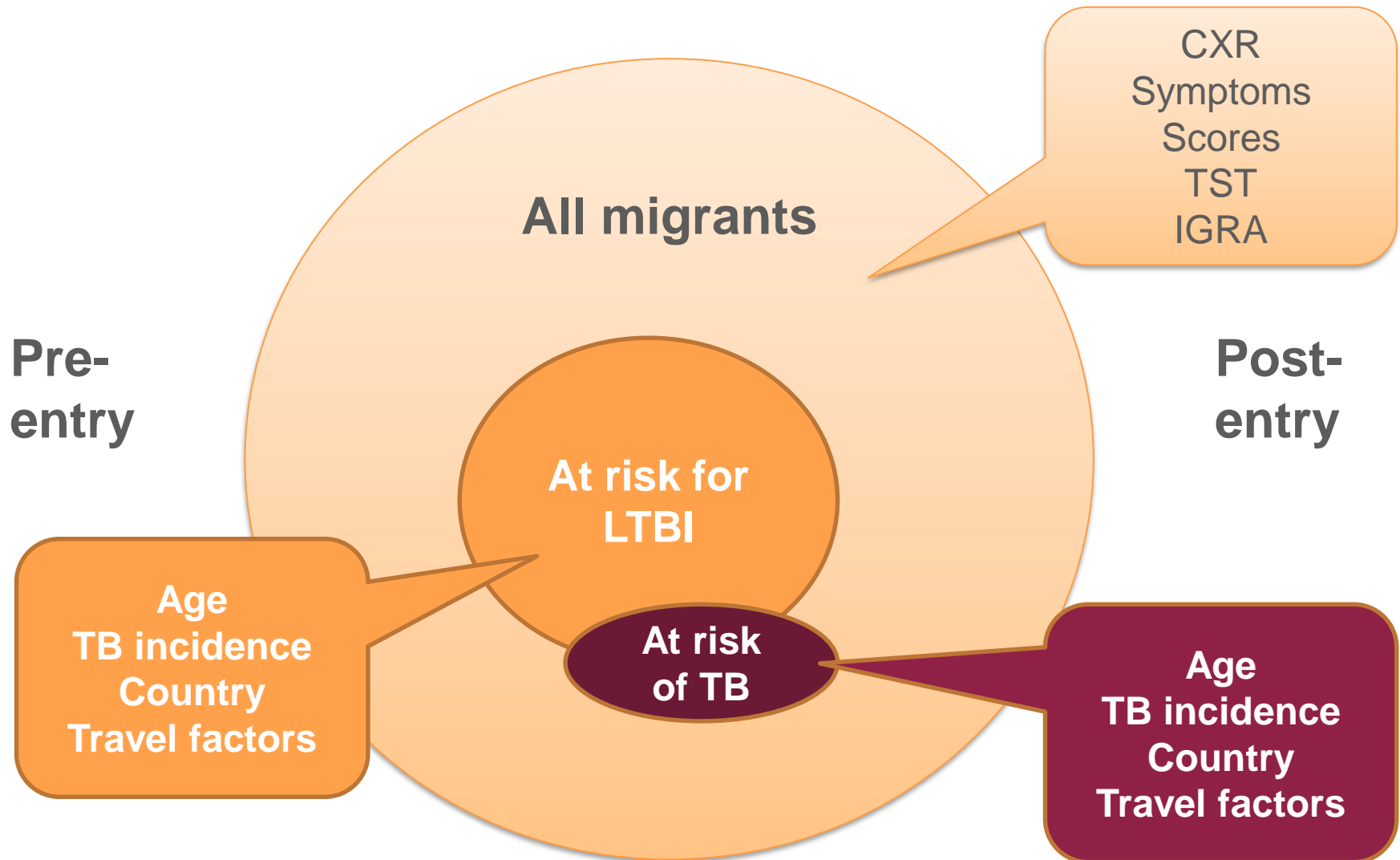
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**Screening practices in migrants for
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Challenges for TB management in migrants

Screening strategies



Country policies for screening

Country	Migrant group	Age years	Screening for pulmonary TB		Screening for LTBI	
			WHO-estimated TB incidence in country of origin / 100 000	Main recommended screening method	WHO-estimated TB incidence in country of origin /100 000	LTBI screening test
Belgium	Asylum seekers	<5 or pregnant women	All	CXR for those with LTBI	All	TST
		≥ 5 (excluding pregnant women)	All	CXR [†]	NA	None
	Other migrants		NA	None	NA	None
Finland	Asylum seekers	All	>50 or from conflict areas <50 (Syria, Iraq)	CXR	NA [‡]	None
	Other migrants	All	>50	CXR	NA	None
Germany	Asylum seekers in community/reception centres					
		<15 or pregnant women	All	Initial TST/IGRA followed by further active TB diagnostics for those testing positive	NA	None [§]
		≥ 15 (excluding pregnant women)	All	CXR	NA	None
	Other migrants	NA	NA	None	NA	None

Country policies for screening

Country	Migrant group	Age years	Screening for pulmonary TB		Screening for LTBI	
			WHO-estimated TB incidence in country of origin / 100 000	Main recommended screening method	WHO-estimated TB incidence in country of origin /100 000	LTBI screening test
Netherlands	Asylum seekers	<18	>50	CXR	>50 (not yet implemented) ⁺	Not yet decided
		≥ 18	>50	CXR ⁺	NA	None
	Other migrants	<18	>50	CXR for those with LTBI	>50	TST or IGRA
		≥ 18	>50	CXR ⁺	NA	None
Norway	Asylum seekers	<15	All	CXR for those with LTBI	All	IGRA
		15–34	All	CXR	>200**	IGRA
		≥ 35	All	CXR	NA**	None
	Other migrants	<15	>40	CXR for those with LTBI	>40**	IGRA
		15–34	>40	CXR	>200**	IGRA
		≥ 35	>40	CXR	NA**	None
Spain	Asylum seekers and other migrants	All	High-incidence countries ⁺⁺	CXR for those with LTBI	High-incidence countries ⁺⁺	TST or IGRA
Sweden	Asylum seekers	All	>100	CXR for those with LTBI	>100 ⁺⁺	TST or IGRA
	Other migrants	NA	NA	None	NA	None
Switzerland	Asylum seekers	All	All	Interview	NA	None
	Other migrants	NA	NA	None	NA	None

Active TB and LTBI screening

- NO: < 35 y of age routine LTBI and aTB entry screening
- National Norwegian Surveillance System for Infectious Diseases , TB within 5 years

Country of origin (WHO-estimated TB incidence rate per 100 000)*	Incident TB based on diagnosis ≥ 1 month after arrival			
	Preventable TB††	NNS‡§	NNT, crude‡¶	NNT, corrected‡**
Countries grouped by estimated TB incidence rate*				
>150/100 000	241 (341–159)	154 (109–234)	32 (23–49)	23 (16–35)
>200/100 000	193 (274–127)	121 (85–183)	28 (20–43)	20 (15–31)
>200/100 000 §§	248 (351–164)	149 (105–226)	35 (25–53)	23 (16–34)

Active TB screening

- NL: mandatory CXR for all children for aTB, no LTBI screening
- 2013-2017, n = 34 157

TABLE 1 Number and results of asylum seeker children screening upon arrival in the Netherlands, 2013-2017.										
Age (years)	Number of children screened	Number of questionnaires taken/ total number of children per age group (%)	Number of positive/total number of TST# (%)	Number of positive/total number of IGRA† tests (%)	Number of positive/total number of sputum cultures for <i>Mycobacterium tuberculosis</i> (%)	Number of intrathoracic TB cases (prevalence rate per 100 000 screened)	Number needed to screen (NNS+) related to TB incidence rate in country of origin			
							<i>TB incidence/100 000</i>			
							<50	50-99	100-199	>200
0-4	7 402	81 (1,1)	4/41 (9,8)	0/1 (0)	0/0 (0)	0 (0)	n.a.*	n.a.	n.a.	n.a.
5-11	14 192	132 (0,9)	4/28 (14,3)	2/2 (100)	0/19 (0)	2 (14)	n.a.	n.a.	n.a.	2250
12-17	12 563	471 (3,7)	13/15 (86,6)	4/6 (66,7)	15/62 (24,2)	19 (151)	n.a.	n.a.	1068	368
Total <18	34 157	684 (2,0)	21/84 (25,0)	6/9 (66,7)	15/81 (18,5)	21 (61)				

LTBI screening

- CH: at school, defined by risk criteria, TST
- 2001-2015, n = 1120

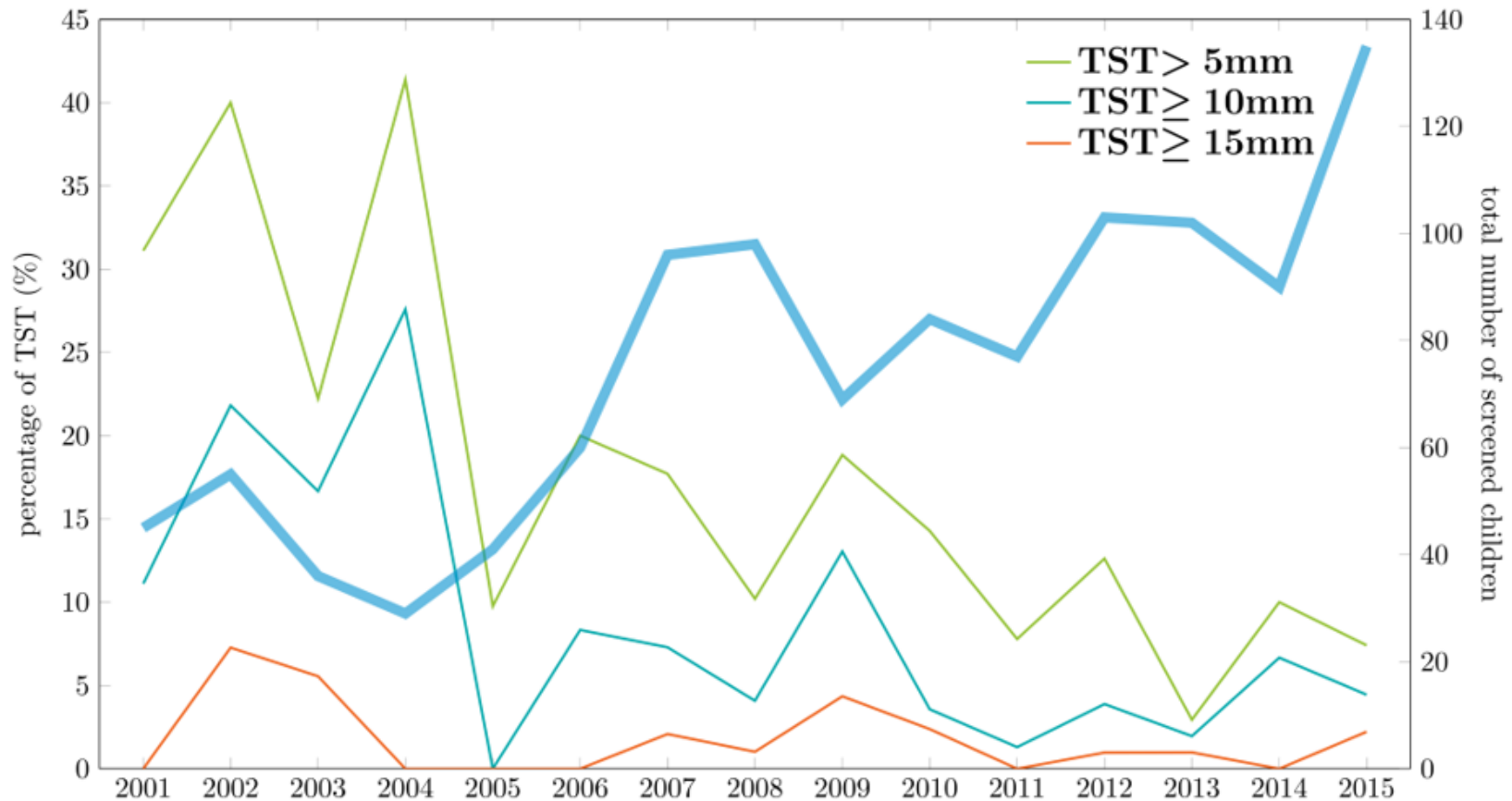
School-based LTBI screening Switzerland

Table 1 Characteristics of the 1120 study participants

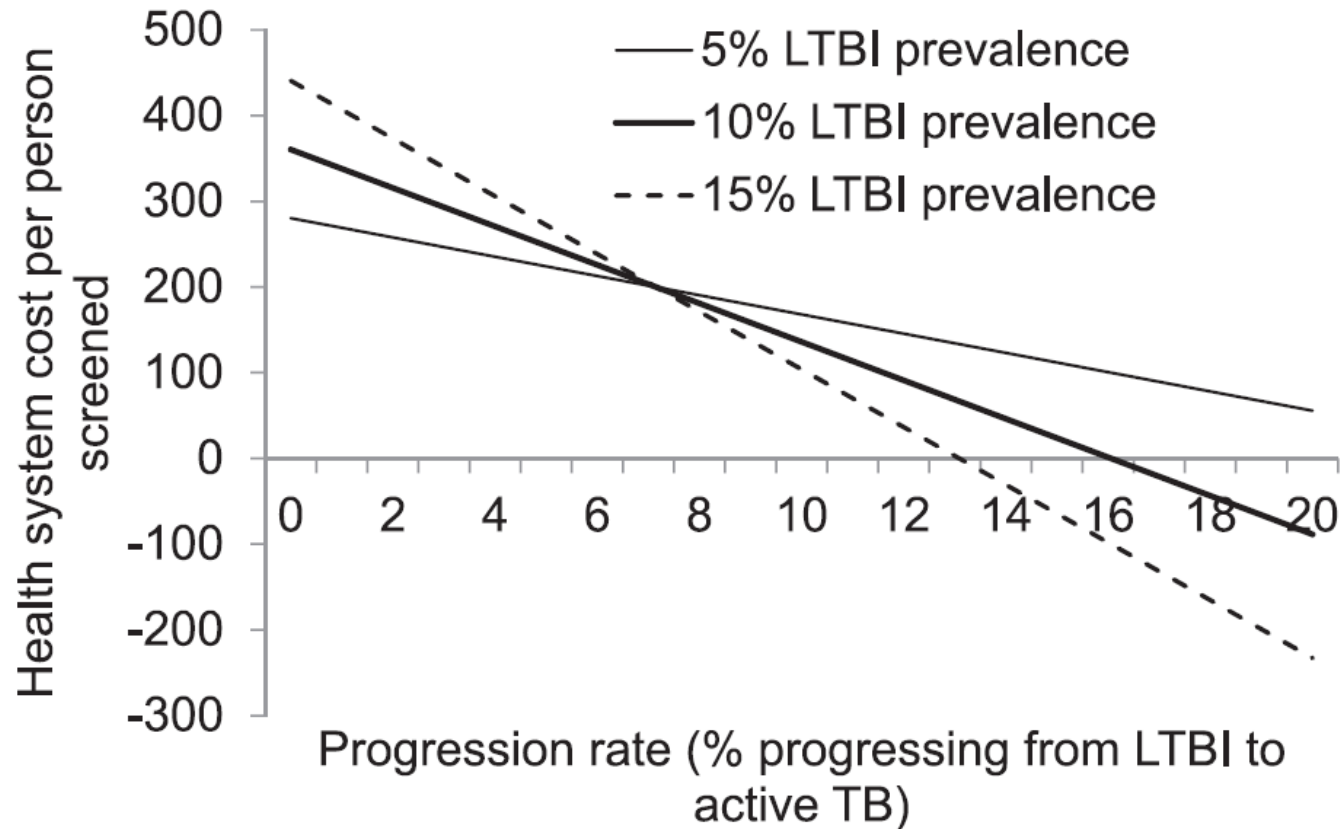
	Mean (standard deviation)/ Number (proportion)
Anthropometric data	
Age (years)	10.9 (2.8)
Female	512 (45.7)
Weight (kg)*	41.3 (16.1)
Hight (cm) ^a	143 (18.8)
BMI (kg/m ²) ^a	19 (3.8)
Weight for age z-score*	0.53 (2.5)
Weight for age z-score*	0.11 (1.0)
BMI for age z-score*	0.44 (1.2)
BCG vaccine*	
Immunization documented	
Yes	397 (81.3)
No	91 (18.6)
Scar documented	
Yes	606 (60.9)
No	388 (39.1)
Scar or immunization documented	
Yes	714 (69.1)
No	319 (30.9)
TST	
negative	955 (85.3)
>5 mm	165 (14.7)
≥10 mm	78 (6.9)
≥15 mm	19 (1.7)

Data available for 1053 children.

Screening over the years



Cost-effectiveness analysis



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Challenges for TB screening

- Logistics
- Cost
- Follow-up
- Adherence

