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# Latent tuberculosis infection screening and treatment among asylum seekers recently arrived in Switzerland. A pilot study in Vaud County

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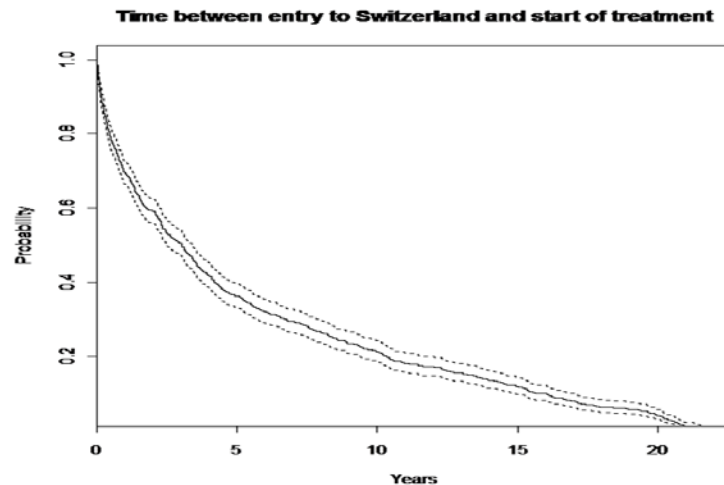
Conflict of interest: none

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# Background

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- ▶ The majority of tuberculosis cases notified in Switzerland are observed among patients born in foreign countries, mostly in young adults, who stay in the country for several months or years.



Source: SFOPH

- ▶ The prevalence of latent tuberculosis infection (LTBI) is higher in migrants than in the local population.
  - ▶ LTBI is asymptomatic therefore not detected by the current border screening.
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# Background

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Detection of LTBI among asylum seekers with a high risk of infection and possible reactivation may prevent future cases of tuberculosis.

ECDC 2008 Meima and Vlas

Detection of LTBI with Interferon Gamma Release Assays (IGRA) is sensitive, specific, effective but expensive.

Screening all migrants without consideration of the risk factors may not be cost effective.

Thorax 2010,65:178-180 Hardy and all

A more efficient approach would be to assess the risk factors associated with LTBI among the asylum seekers arriving in the host country.

Such an approach would improve the feasibility and the cost effectiveness of screening and preventive treatment.

ERJ 2005,25:1107-1116

# A two step approach

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- Screening for LTBI using IGRA
  - Assess the prevalence of LTBI
  - Assess factors associated with LTBI
- Treat LTBI with appropriate preventive treatment (4R/ 9INH)
  - Assess completion rates

# Methods

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**POPULATION:** asylum seekers referred to Vaud county after border screening

**INTERVENTION:**

Voluntary screening by IGRA

Preventive treatment prescription in migrants with positive IGRA

**DESIGN:** prospective cross-sectional study

**SETTINGS:** Two Asylum Seekers Host Centers (Sainte – Croix, Crissier)

**TIMING:** September 2009 to July 2010

**PROCEDURE:**

- Questionnaire and blood sampling for IGRA (T-SPOT.*TB*) in volunteers by CSI Nurse.
- IGRA +: medical assessment and preventive treatment prescription

# Methods



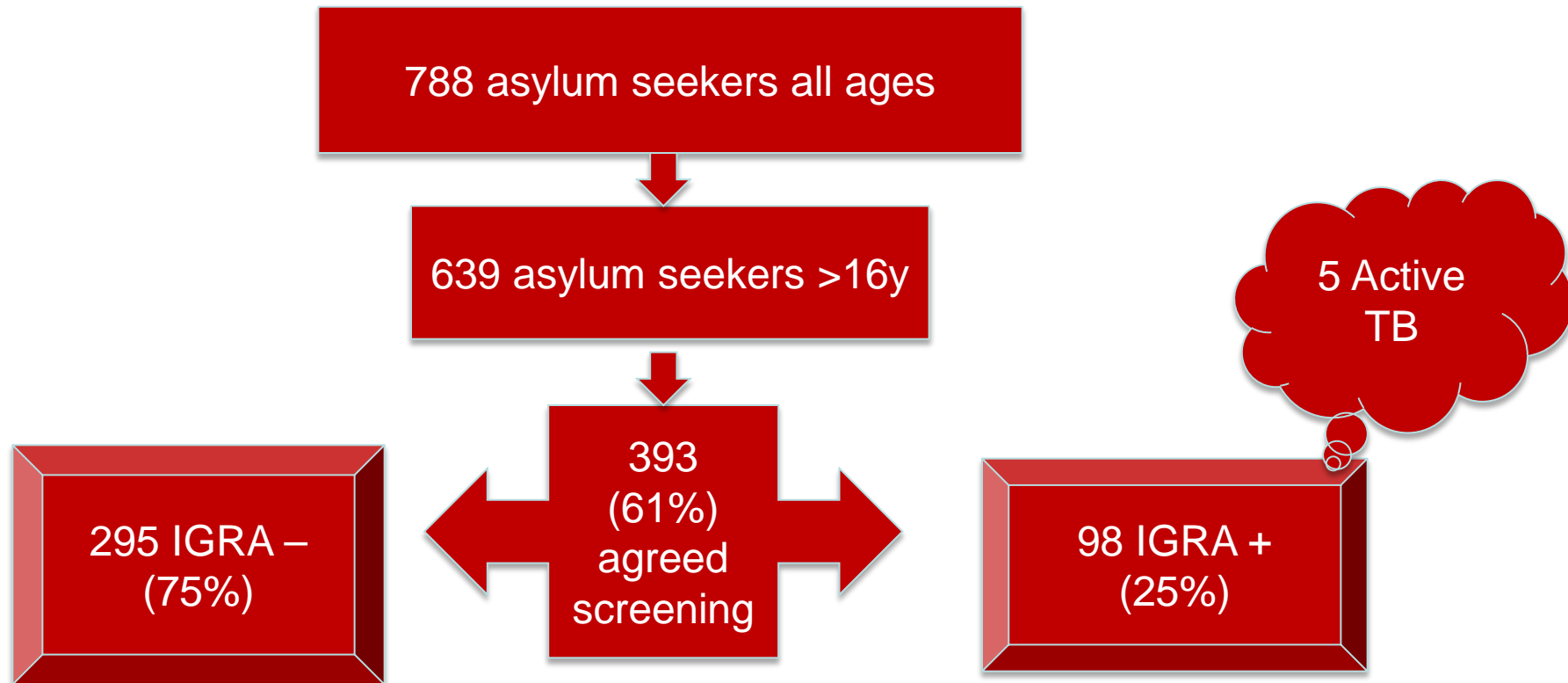
Crissier Host Center

Sainte – Croix Host Center



# Study flowchart

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# Collective Screened

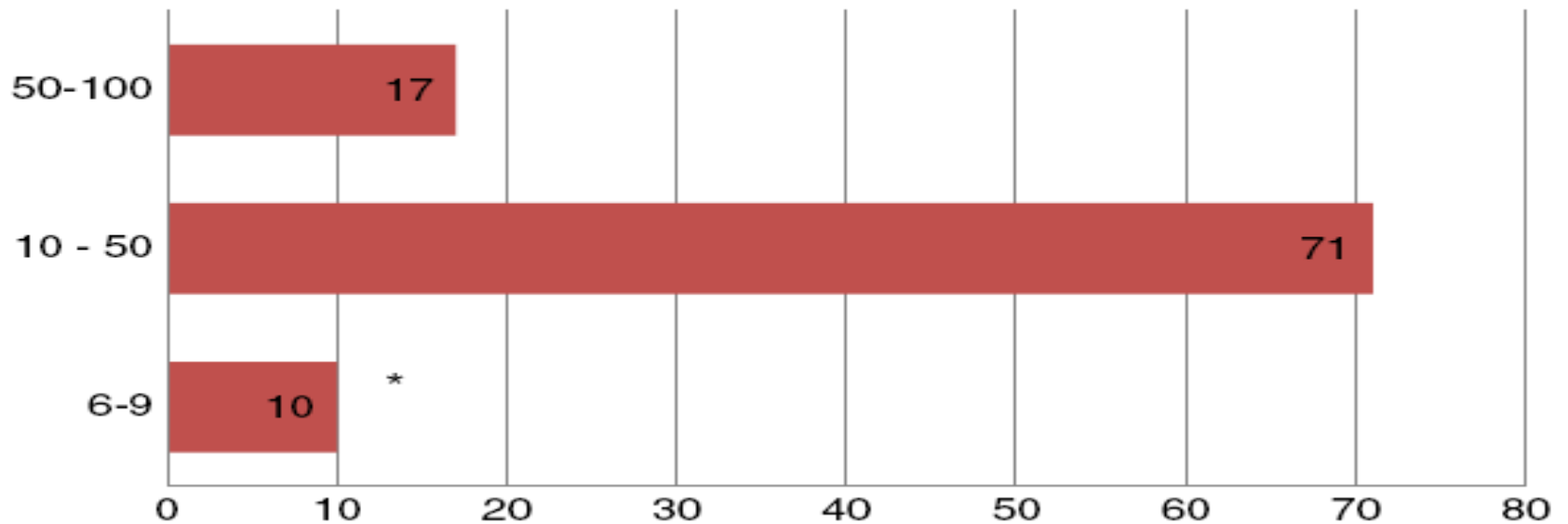
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	screened	not screened	total
FSU	20	33	53
Balkan	62	45	107
Asia	127	50	177
Africa	184	118	<b>301</b>



# IGRA spots distribution

## Distribution of Spots



# Statistical Analysis

## (factors associated with positive IGRA)

Table 1 Univariate analysis

Factors	Negative n(%)	Positive n(%)	Odds ratio	(95% Conf. interval)	p<0.05
Age , mean(sd)	29.09	27.63	1.02	0.99 , 1.04	0.179
Age (by 10 years)	29.09	27.63	1.18	0.93 , 1.49	0.179
Sex					
Male	214	72	1.05	0.62 , 1.76	0.858
<b>Origin</b>					
<i>balkanic origin (ref)</i>	54	8	ref.	ref.	ref.
<i>FSU</i>	12	8	4.5	1.41 , 14.4	0.011
<i>Asia</i>	110	17	1.04	0.42 , 2.57	0.927
<i>Africa</i>	119	65	3.69	1.65 , 8.22	0.001
Ground transit	109	60	2.49	1.54 , 4.02	0.000
Married	124	48	1.34	0.84 , 2.12	0.219
Siblings	243	73	0.53	0.30 , 0.92	0.025
Offspring	111	46	1.45	0.91 , 2.32	0.116
Congregate settings	96	34	1.1	0.68 , 1.78	0.695
Addictions	138	54	1.4	0.88 , 2.21	0.154
Immunosuppression	19	7	1.3	0.46 , 2.78	0.79
Prev. TB exposure	12	9	2.38	0.97 , 5.84	0.057
Cough	17	12	2.3	1.05 , 5.01	0.036

Table 2 Multivariate logistic regression

Risk factor	Odds ratio	(95% Conf. interval)	p<0.05
Age (by 10 years)	1.37	0.99 , 1.88	0.054
Origin			
<i>balkanic (ref)</i>	ref.	ref.	ref.
<i>FSU</i>	12.54	2.02 , 77.9	0.007
<i>Asia</i>	2.63	0.49 , 14.12	0.26
<i>Africa</i>	26.11	5.04 , 135.43	0.000
Ground transit	2.42	1.34 , 4.37	0.003
Married	2	1.01 , 3.82	0.038
Prev. TB exposition	1.94	0.65 , 5.72	0.233
Cough	8.08	2.63 , 24.87	0.000

FSU: Former Soviet Union

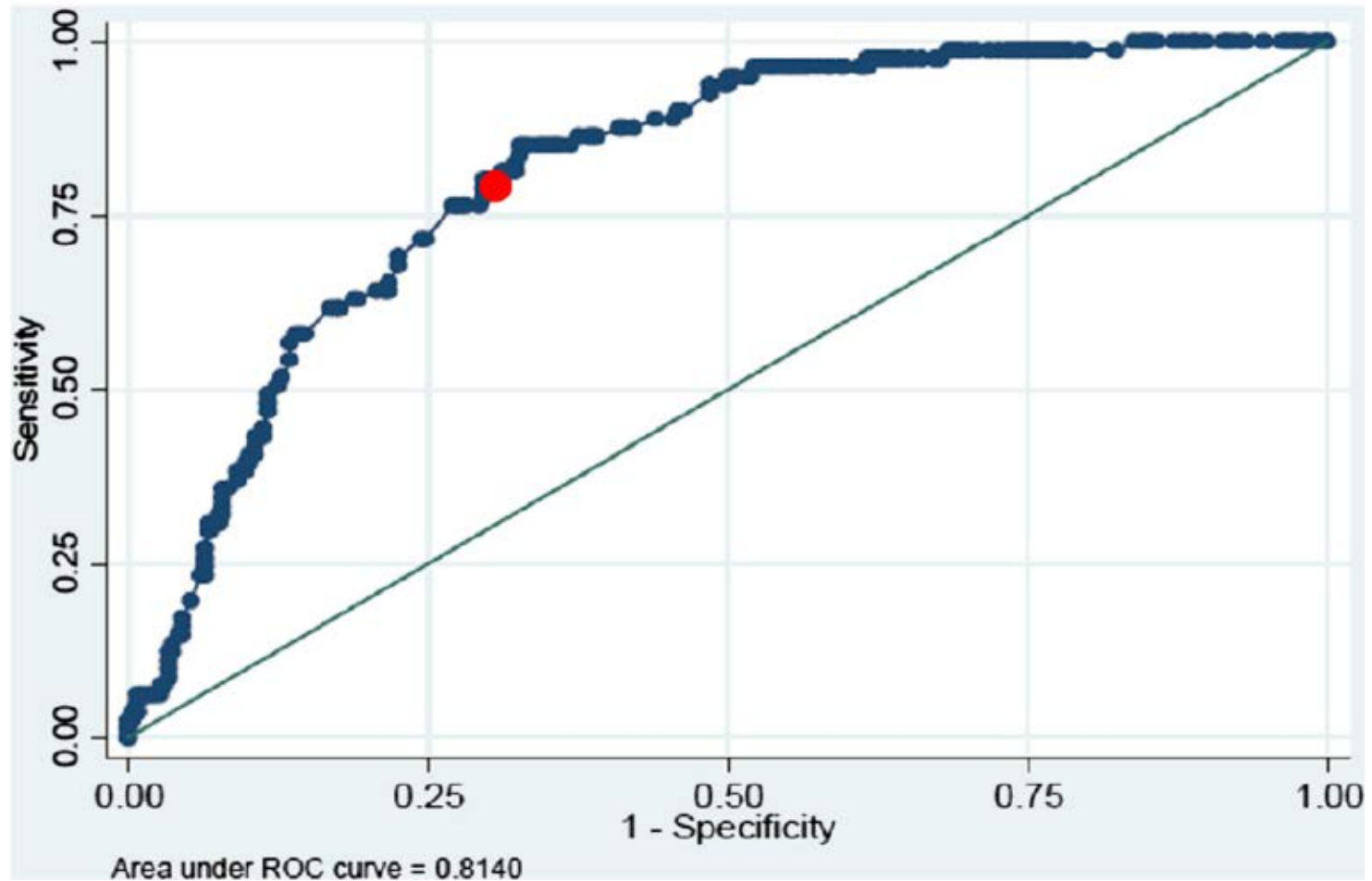
# Predictive score

African 7+ }  
Asian 3+ } Age (years)/10 + 3 $\alpha$ +6 $\beta$ +2 $\gamma$ +2 $\delta$ = { >13 perform IGRA screening  
FSU 9+ } { <13 no IGRA screening  
Balkanic n.a.\*

{  
 $\alpha$ = ground transition: yes=1, no=0  
 $\beta$ = cough: yes=1, no=0  
 $\gamma$ = married status: yes=1, no=0  
 $\delta$ = previous TB exposure: yes=1, no=0  
}

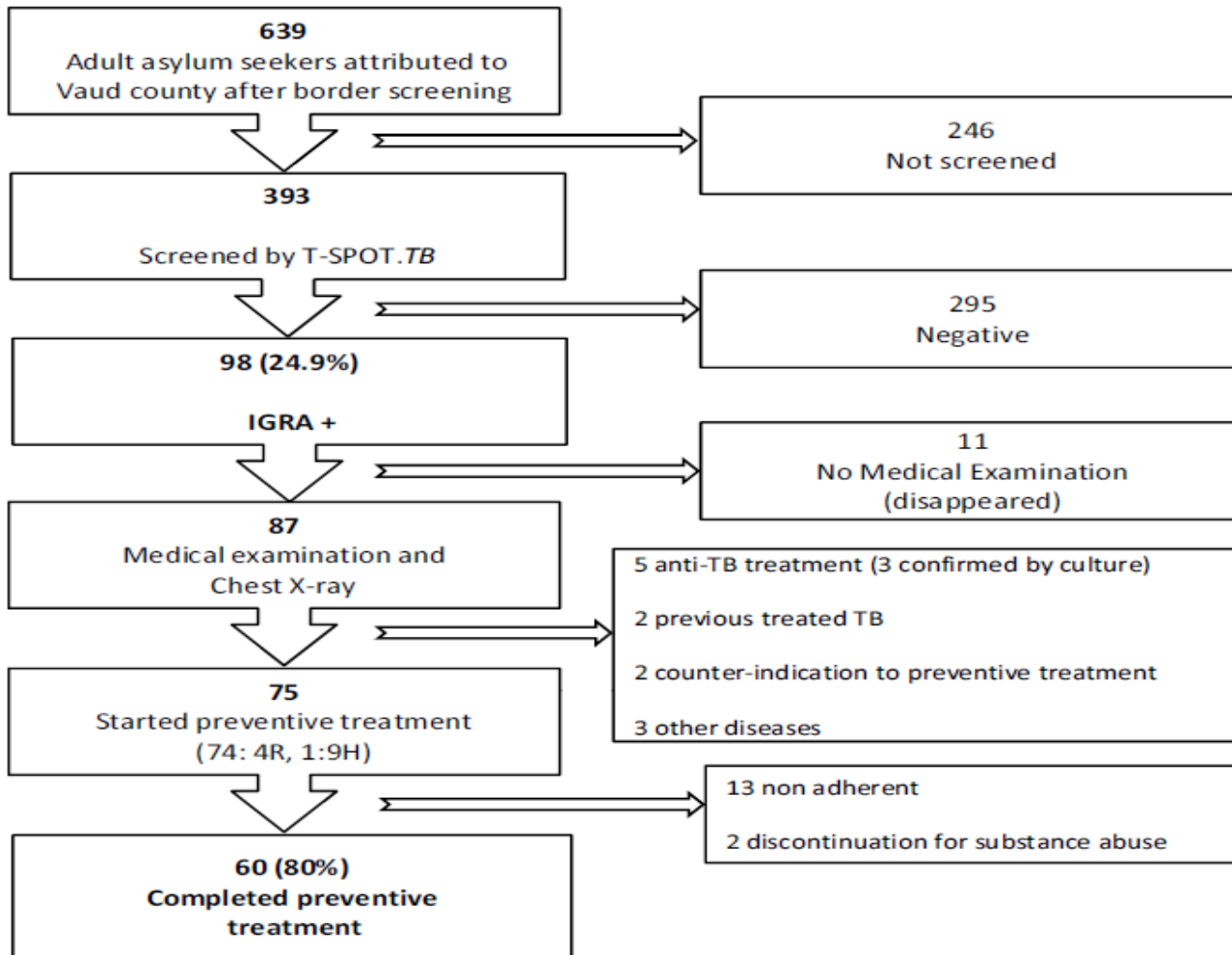
\* Balkanic asylum seekers demonstrate similar LTBI/TB prevalence as native population

# ROC – Cutoff of 13



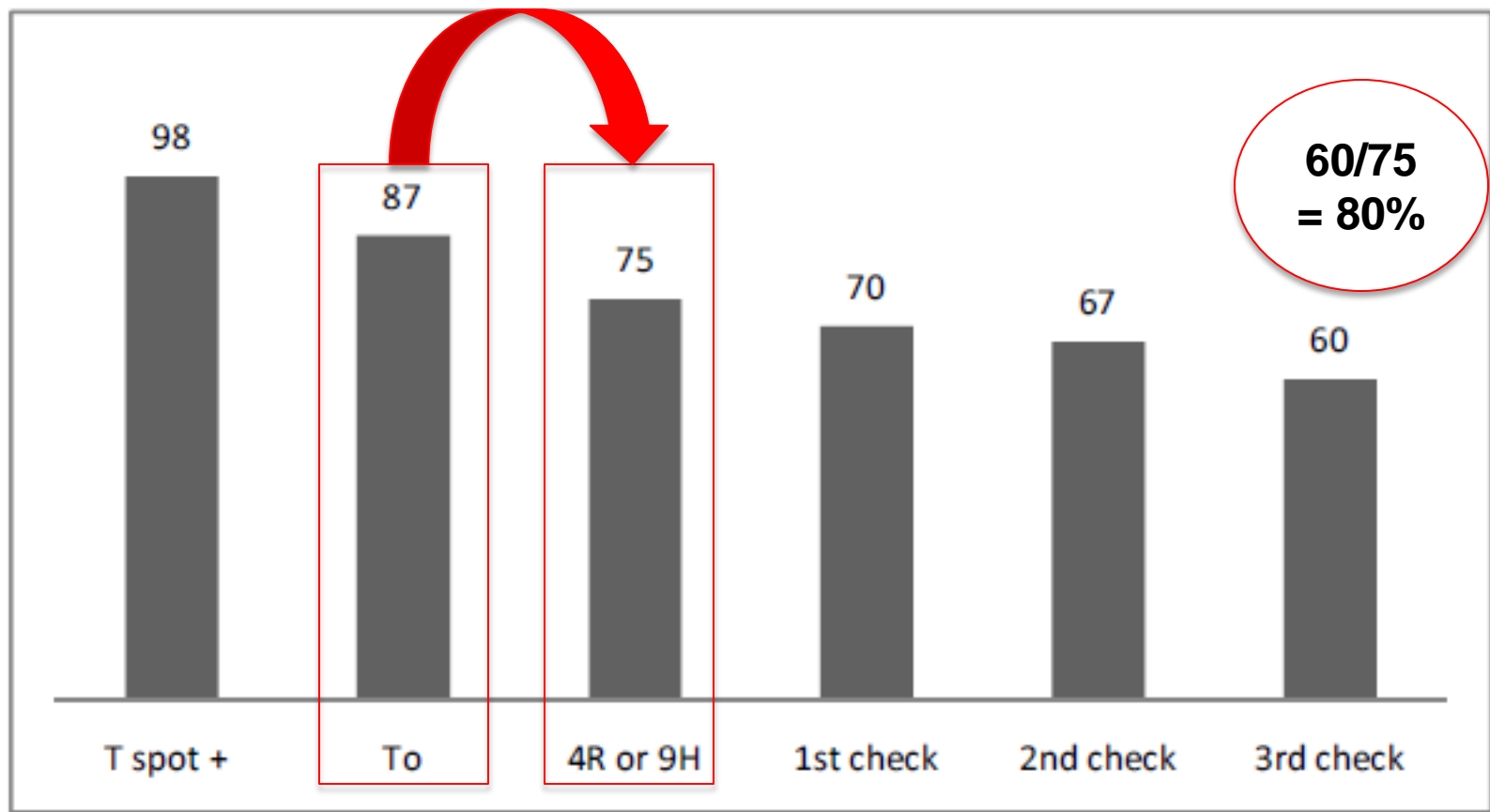
# Preventive treatment completion

fig. 1: Preventive treatment completion flowchart



# Drop out evolution

fig. II. Follow up evolution



# Limitations

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Limited sample of asylum seekers  
**But representative!**

Two Immigration host centers  
**The biggest of Vaud County!**

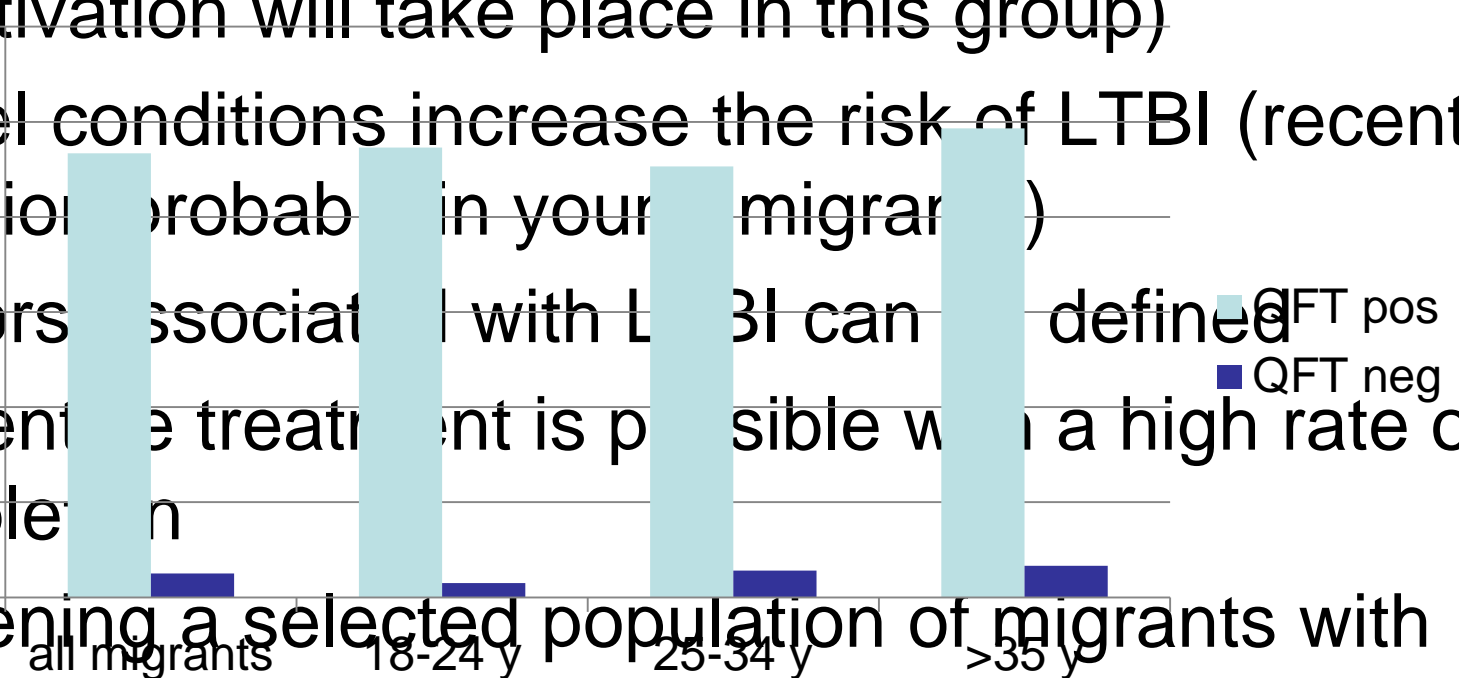
Vaud County

**Host to 9% of the total asylum seeker population, random selection!**

Highly volatile population, drop-outs before the medical examination  
**But we made it!**

# Conclusions

- LTBI is frequent in the migrant population (reactivation will take place in this group)
- Travel conditions increase the risk of LTBI (recent infection probably in your migrant country)
- Factors associated with LTBI can be defined
- Preventive treatment is possible with a high rate of completion
- Screening a selected population of migrants with high risk of development of TB could be considered



Mulder C, ERJ 2012, doi:10.1183/09031936.00010612



# Articles

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RESEARCH ARTICLE

Open Access

## Factors associated with latent tuberculosis among asylum seekers in Switzerland: a cross-sectional study in Vaud County

Apostolos Sarivalasis<sup>1\*</sup>, Jean - Pierre Zellweger<sup>2</sup>, Mohamed Faouzi<sup>3</sup>, Oscar Daher<sup>4</sup>, Charlotte Deslarzes<sup>5</sup> and Patrick Bodenmann<sup>1</sup>

*BMC Infectious Diseases* 2012, **12**:285

## High rate of completion of preventive therapy for latent tuberculosis infection among asylum seekers, Switzerland

A. Sarivalasis <sup>1</sup>, P. Bodenmann <sup>1</sup>, E. Langenskiold <sup>2</sup>, C. Lutchmaya-Flick <sup>3</sup>, O. Daher <sup>3</sup>, J.P. Zellweger<sup>4</sup>

Submitted to SMW

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