Screening for Latent TB in HIV Positive Patients

Can this be done?

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SWAGNET

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BACKGROUND

HIV & TB co-infected individuals are more likely to develop active and rapidly progressive TB[1]

Estimated annual risk of reactivation of TB in HIV/TB co-infected individuals is ~10% or ~30% cumulative lifetime risk versus 8-10% lifetime-risk in HIV-negative individuals[1, 2]

Current Guidelines on Screening for Latent TB Infection in HIV Positive Patients

NICE GUIDELINES

- CD4 <200 cells — IGRA + TST
- CD4 200-500 cells — IGRA +/- TST
- CD4 >500 cells — No Test

BHIVA RECOMMENDATIONS

- High Incidence Countries → Sub-Saharan Africa → ARV <2yrs & any CD4 count — IGRA
- Medium Incidence Countries → E. Europe, Asia, N. Africa, Mid. East & the Caribbean → ARV <2yrs & CD4 <500 — IGRA
- Low Incidence Countries → Caucasians from UK → Not on ARV & CD4 <350 — IGRA

Keywords: LTBI –latent TB infection; IGRA – interferon gamma release assay; TST- Tuberculin skin test; ARV – antiretroviral therapy

AIM

To analyse the feasibility of screening for latent TB infection (LTBI) in an inner-city UK HIV patient cohort

METHOD

All HIV-positive patients attending a London HIV clinic for one year (2010-2011) were analysed

Screening was modelled using NICE and BHIVA guidelines

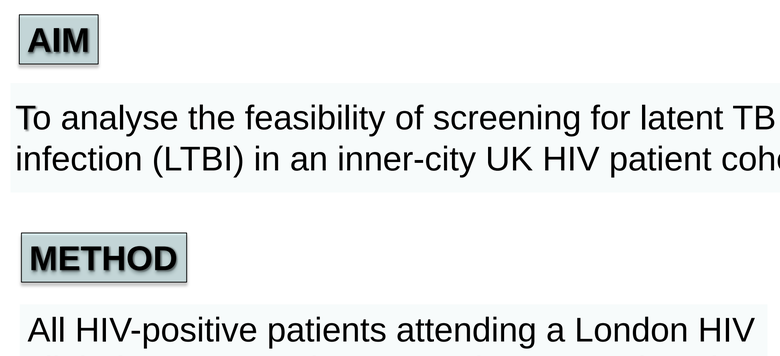
RESULTS

1,158 HIV positive patients attended

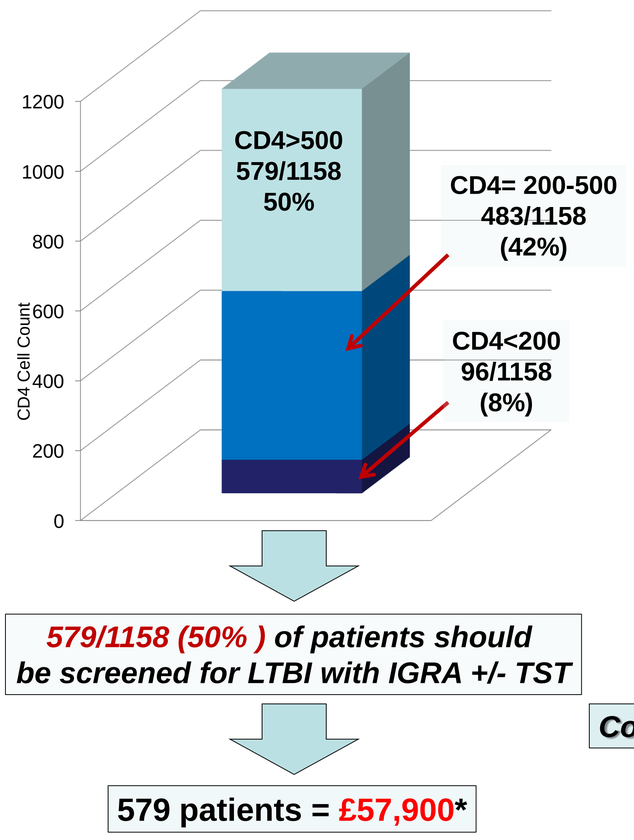
Demographics

57% male and 43% female

Chart 1. Breakdown of ethnicities



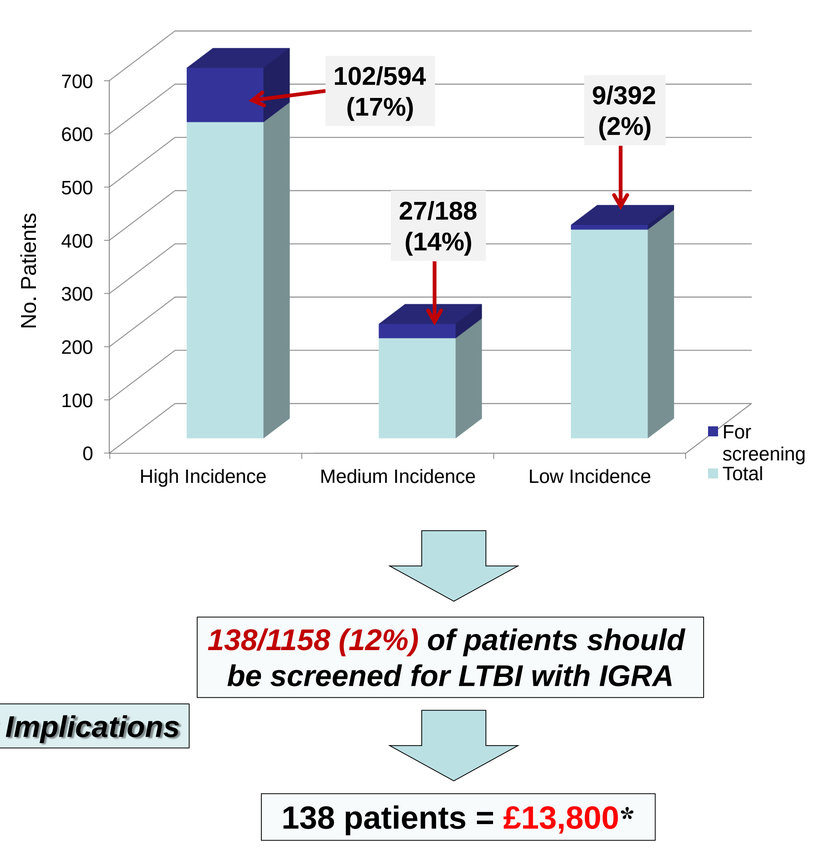
Modelling NICE Guidelines



579/1158 (50%) of patients should be screened for LTBI with IGRA +/- TST

579 patients = £57,900*

Modelling BHIVA Recommendations



138/1158 (12%) of patients should be screened for LTBI with IGRA

138 patients = £13,800*

*Assuming each IGRA costs £100

Cost Implications

Table 1. Breakdown of ethnicities Vs CD4 cell count

	CD4 <199			CD4 200-500			CD4 >501			Total
Ethnicity	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	**Female**	**Male**	**Total**	
White	10	18	28	21	134	155	26	183	209	**392**
Black Caribbean	1	0	1	9	23	32	22	33	55	**88**
Black African	28	30	58	159	93	252	194	70	264	**574**
Black-Other/Unspecified	0	2	2	1	5	6	5	5	10	**18**
Indian Sub-continent	1	0	1	1	10	11	4	4	8	**20**
Other/mixed	1	3	4	2	15	17	5	13	18	**39**
Other Asian	1	1	2	0	8	8	8	5	13	**23**
Not Known				0	2	2	1	1	2	**4**
Total	42	54	**96 (8%)**	193	290	**483 (42%)**	265	314	**579 (50%)**	**1158**

Modelling Number of TB Cases Prevented

World Health Organisation estimate approx.1/3 of the world's population is infected with *M. Tuberculosis*[3] → Assuming 1/3 LTBI rate in Black African and 10% annual reactivation → Screen 574 Black Africans → Estimate 189 positive IGRAs → Predicted prevention of 19 cases of active TB over 1 year → Predicted prevention of 57 lifetime cases

DISCUSSION

Modelling current NICE and BHIVA guidelines we have generated widely divergent strategies; screening 50% versus 12% of all attendees at a cost of £46,000 versus £10,880; not including cost associated with tuberculin skin testing

Assuming a third of LTBI infection in our Black African cohort we have a predicted prevention of 19 cases of active TB in one year

However we only see 10-12 total HIV-TB co-infection cases per annum (56/5year) and about half of these are in undiagnosed seropositive individuals

CONCLUSION

Screening for LTBI in HIV positive patients may reduce the annual and lifetime risk of active TB in co-infected individuals but benefits may have been overestimated

NICE and BHIVA guidelines generate widely divergent strategies with differing cost implications

Further evaluation and modelling of LTBI strategies should accompany roll-out of screening

References

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2. Fitzgerald DW, Morse MM et al. Active TB in individuals infected with HIV after isoniazid prophylaxis. Clin Infect Dis 2000; 31:1495
3. World Health Organisation. Global Tuberculosis Control-Surveillance, Planning, Financing. WHO report 2005, Geneva, Switzerland; 2005