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BACKGROUND

- TB is the most important cause of HIV-related morbidity and mortality globally, especially in sub-Saharan Africa.
- Africans comprise an increasing proportion of individuals accessing HIV care in the United Kingdom.
- This study aimed to estimate TB incidence in African and non-African patients attending HIV clinics in the UK, and compare incidence pre- and while on antiretroviral therapy (ART).

METHODS

- UK CHIC is an observational cohort of HIV clinical centres in the UK; 10 centres contributed data for this analysis
- Adults first attending between January 1996 and December 2004 were included. Ethnic group was assigned according to categories reported by centres
- TB episodes between January 1996 and June 2005 were included. For TB incidence analysis, we excluded TB episodes <3 months after entry into the UK CHIC cohort, assuming these episodes were ascertained at the initial visit. Correspondingly, we excluded the first three months of follow-up time after the initial clinic visit.
- ART start date was the date the participant first received ≥ 3 ART agents
- Follow-up time pre-ART was calculated from three months after the first visit to a study clinic until the earliest of the first TB episode, the ART start date, or the last study visit for those who did not start ART
- Follow-up time on ART started at the latest of ART start date or three months after the first study visit, and ended at the earliest of first TB episode or last study visit
- We used Poisson regression to analyse risk factors for TB after ART start. We used the most recent CD4 count, updating when new counts were recorded.

RESULTS

22207 individuals were included in the overall analysis.

Overall one or more TB episodes was experienced by:

- 494/5055 (9.8%) of black African
- 185/13056 (1.4%) of white
- 126/4096 (3.1%) of individuals in other ethnic groups

Median time from HIV diagnosis to first TB episode was

- 0.8 (IQR 0.0, 12.0) months in black African
- 38.4 (IQR 4.8, 73.9) months in white
- 7.6 (IQR 0.0, 78.8) months in other ethnic groups

RESULTS (continued)

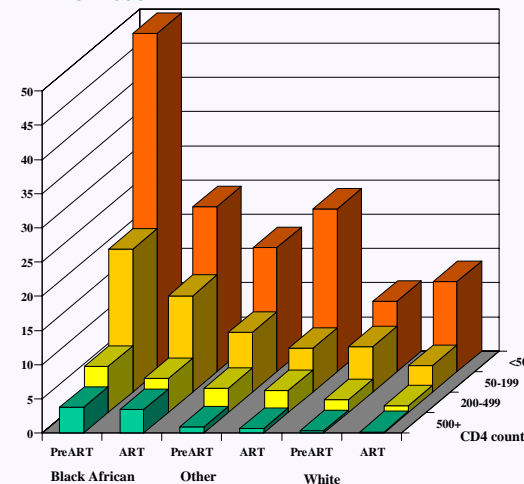
BASELINE CHARACTERISTICS OF 20688 INDIVIDUALS CONTRIBUTING TO THE ANALYSIS OF TB INCIDENCE

	Black African (N=4619)	White (N=12339)	Other (N=3730)
Age in years (median)	33.7	35.0	33.6
Sex (% male)	36.6%	92.4%	79.6%
CD4 at entry (median [IQR])	256 (130, 405)	341 (191, 522)	330 (179, 512)
CD4 at ART start (median [IQR])	151 (60, 247)	195 (91, 301)	173 (70, 280)
CD4 1yr after ART start (median [IQR])	280 (180, 400)	330 (202, 477)	319 (202, 460)
Log VL at ART start (median [IQR])	4.7 (3.9, 5.2)	4.9 (4.2, 5.4)	4.8 (4.1, 5.3)
Log VL 1 yr after ART start (median, IQR)	1.7 (1.7, 3.8)	2.4 (1.7, 3.4)	2.5 (1.7, 4.5)

TB INCIDENCE RATES (per 1000 pyrs [95% CI]) OVERALL AND BY ETHNIC GROUP

	Pre ART	On ART
Overall	3.3 (2.7, 4.0)	3.0 (2.5, 3.4)
Black African	9.2 (6.4, 12.0)	7.4 (5.9, 9.0)
Other	3.6 (2.1, 5.1)	3.5 (2.3, 4.8)
White	2.1 (1.5, 2.7)	1.5 (1.2, 1.9)

TB INCIDENCE RATES (per 1000 pyrs) BY ETHNIC GROUP AND TIME-UPDATED CD4 COUNT



RESULTS (continued)

UNIVARIABLE AND MULTIVARIABLE ANALYSIS OF RISK FACTORS FOR INCIDENT TB AFTER ART START

	Unadjusted rate ratio (95% CI)	Adjusted rate ratio (95% CI)	
Time under follow up (per extra yr)*	0.75 (0.70, 0.80)	1.01 (0.92, 1.12)	
Age at baseline (per 10 yr increase)*	0.75 (0.62, 0.90)	1.04 (0.87, 1.26)	
Sex (male vs. female)	0.47 (0.34, 0.63)	1.20 (0.82, 1.76)	
Ethnic group	White	1	
	Other	2.29 (1.50, 3.51)	1.96 (1.24, 3.11)
	Black African	4.81 (3.48, 6.65)	2.49 (1.51, 4.11)
HIV exposure	Heterosexual	1	
	Sex between men	0.26 (0.19, 0.35)	0.54 (0.32, 0.89)
	Other	0.45 (0.26, 0.81)	0.58 (0.30, 1.11)
CD4 count*	500+	1	
	350-499	2.52 (1.30, 4.91)	2.89 (1.41, 5.93)
	200-349	3.33 (1.78, 6.25)	3.67 (1.75, 7.71)
	51-199	9.51 (5.26, 17.21)	10.81 (4.87, 24.00)
	≤ 50	24.58 (13.01, 46.46)	33.92 (13.68, 84.12)
Nadir CD4 (per 50 cell increase)	0.89 (0.83, 0.96)	1.18 (1.08, 1.28)	
Time since ART start (per 1 yr increase)	0.68 (0.62, 0.75)	0.78 (0.69, 0.89)	
Viral load <50 copies/ml (yes vs. no)*	0.46 (0.34, 0.63)	0.80 (0.57, 1.11)	
Calendar year*	2002-2004	1	
	1999-2001	1.58 (1.15, 2.17)	1.09 (0.78, 1.76)
	1996-1998	1.68 (1.08, 2.58)	0.55 (0.31, 0.98)
* time-updated			

CONCLUSIONS

- Black African ethnicity and low CD4 count are the main risk factors for incident TB
- TB events may have been underascertained, so TB incidence represents a minimum estimate
- Most TB episodes in black Africans are close to first clinic visit
- Overall TB incidence is not reduced after starting ART
- Earlier HIV diagnosis is needed so that interventions can be implemented prior to a first TB episode
- Other strategies to reduce TB incidence, such as TB preventive therapy, should be considered

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