Problem Drug Use Predicts Higher HIV Prevalence in UK Tuberculosis Cases, 2010-2014

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Introduction

- HIV co-infection in tuberculosis (TB) patients is associated with poorer outcomes:
  - Greater adverse events during anti-TB treatment
  - Treatment interruption or non-completion
  - Increased risk of death
  - Higher rates of TB recurrence
- Black African ethnicity and being born in sub-Saharan Africa are known predictors of HIV infection in people with TB in the UK
- Studies from France, Spain and the Netherlands have found associations between HIV co-infection and drug misuse, imprisonment and homelessness among people with TB, however data from the UK are lacking
- We used national surveillance data to identify whether social risk factors are associated with HIV co-infection in notified TB cases

Methods

- We identified adults aged ≥15 years notified with TB between 2010 and 2014 in England, Wales and Northern Ireland from national TB surveillance data
- HIV status was determined by record linkage to national HIV surveillance data and we calculated the proportion of TB cases diagnosed with HIV
- We used univariable and multivariable logistic regression to identify associations between HIV co-infection and social risk factors (current alcohol misuse, current/prior drug misuse, imprisonment or homelessness, and index of multiple deprivation [IMD] score) among people with TB
  - The model was adjusted for year of TB notification, sex, age at TB notification, ethnicity and HIV prevalence in country of birth
  - Drug misuse was defined as one or more of the following:
    - Use of illicit injecting drugs
    - Long-term or regular use of illicit opiates, cocaine, or amphetamines
    - Daily/almost daily use of cannabis or synthetic cannabinoids
  - Alcohol misuse only included patients whose ability to self-administer TB treatment was affected by alcohol misuse
  - IMD score[1] deciles represent relative levels of deprivation of income, employment, health, education, housing and services, crime and living environment for small areas in England and Wales, where 1=most deprived and 10=least deprived

Results

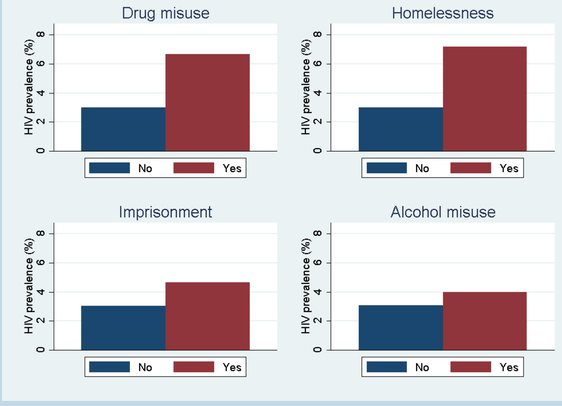
- 30,064 adults notified with TB were included, 931 (**3.1%**) were co-infected with HIV
- 4,756 TB cases (16.0%) were of black African ethnicity and 14,605 (48.6%) were of Indian/Pakistani/Bangladeshi ethnicity
  - Of HIV co-infected cases, 604 (64.9%) were black African and 61 (9.7%) were Indian/Pakistani/Bangladeshi
- 6,754 (22.5%) were UK-born and 3,467 (11.5%) were born in countries with high (>1%) HIV prevalence
  - 576 (61.9%) of cases with HIV co-infection were born in countries with high HIV prevalence and 114 (12.2%) were UK-born
- 2,156 TB cases (7.2%) had one or more social risk factors (Table 1, Figure 1)
  - 1,482 (68.7%) had one social risk factor, 431 (20.0%) had two, 186 (8.6%) had three and 57 (2.6%) had four
- 6,298 TB cases (20.1%) were in the lowest IMD decile

Table 1: Univariable and multivariable odds ratios from logistic regression of social risk factors associated with HIV co-infection among TB cases in England, Wales and Northern Ireland between 2010 and 2014

Social risk factor		TB cases n (% of total)	HIV infection n (row %)	Univariable OR (95% CI)	P value	Multivariable OR (95% CI)	P value
Drug misuse	No	29,284 (97.4)	879 (3.0)	1.00	<0.001	1.00	<0.001
	Yes	780 (2.6)	52 (6.7)	2.31 (1.73 - 3.08)		2.44 (1.71 - 3.49)	
Alcohol misuse	No	29,209 (97.2)	897 (3.1)	1.00	0.148	-	
	Yes	855 (2.8)	34 (4.0)	1.31 (0.92 - 1.85)		-	
Homelessness	No	29,341 (97.6)	879 (3.0)	1.00	<0.001	1.00	0.063
	Yes	723 (2.4)	52 (7.2)	2.51 (1.88 - 3.35)		1.38 (0.99 - 1.93)	
Imprisonment	No	29,292 (97.4)	895 (3.1)	1.00	0.017	1.00	0.089
	Yes	772 (2.6)	36 (4.7)	1.55 (1.10 - 2.18)		0.71 (0.47 - 1.07)	
IMD score decile for each unit increase				0.96 (0.93 - 0.99)	<0.001	0.99 (0.96 - 1.02)	0.626

CI: confidence interval, OR: odds ratio. The multivariable model (30,064 TB cases) included IMD score decile and prior or current drug misuse, homelessness and imprisonment, and was adjusted for year of TB notification, sex, age at TB notification, ethnicity, and HIV prevalence in country of birth.

Figure 1: The percentage of TB cases 2010-2014 with a history of drug misuse, homelessness, imprisonment or alcohol misuse co-infected with HIV



- In univariable analyses:
  - Increased odds of HIV co-infection were associated with drug misuse, homelessness and imprisonment (Table 1)
  - Increasing IMD decile was associated with lower odds of co-infection
  - Alcohol misuse was not significantly associated with HIV co-infection
- In a multivariable model adjusted for age, sex, ethnicity, country of birth and year of notification, only drug misuse had a statistically significant association with HIV co-infection (OR 2.44)

Conclusions

- Drug misuse was independently associated with a higher prevalence of HIV among TB cases, however overall social risk factors were not strong predictors compared to other countries
- A greater focus on screening for and preventing both TB and HIV among people who misuse drugs may reduce the prevalence of HIV co-infection in this population

References

1. Department for Communities and Local Government. English Indices of Deprivation. 2015. https://www.gov.uk/government/collections/english-indices-of-deprivation