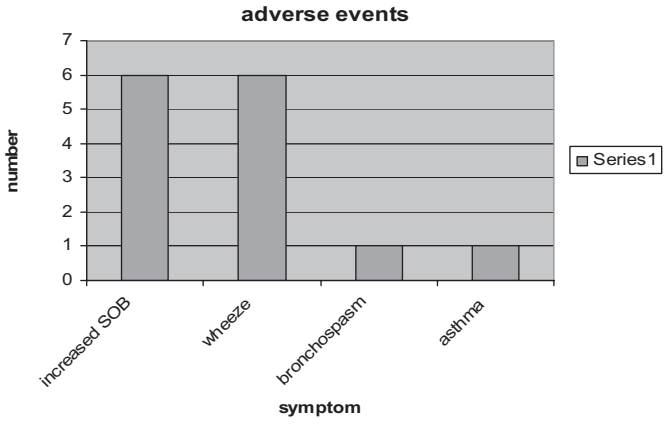
(89%), followed by nebivolol (40%), carvedilol (37%) and metoprolol (21%).

Conclusion Our results show that a diagnosis of COPD is not considered a contraindication to BB prescription by cardiologists with few reporting an increase in symptoms. We would suggest that all patients with COPD and HF should at least be considered for BB therapy while being mindful of potential adverse effects.



Abstract P48 Figure 1 Adverse events experienced as a result of β blocker prescription.

REFERENCES

1. **Hawkins NM,** Petrie MC, Macdonald MR, *et al*. Heart failure and chronic obstructive pulmonary disease the quandary of Beta-blockers and Beta-agonists. *J Am Coll Cardiol* 2011;**57**:2127–38.
2. **Short P,** *et al*. Effect of beta blockers in treatment of chronic obstructive pulmonary disease: A retrospective cohort study. *BMJ* 2011;**34**:d2549.

P49 INTRA-SUBJECT VARIATION IN BREATH PROFILE OF EXHALED VOLATILE ORGANIC COMPOUNDS (EVOCS) IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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Introduction Specific patterns of exhaled volatile compounds (eVOCs) have been described in a variety of diseases including lung cancer, tuberculosis and COPD, but there are no standardised and universally acceptable methods of sample collection, processing and data analysis. Moreover, there is little if any knowledge of repeatability of eVOCs profile. As part of a larger cohort study on eVOCs in COPD (ISRCTN82911859) we aimed to test the repeatability of eVOCs profiles.

Methods 118 COPD patients and 63 healthy controls provided three consecutive breath samples (one sample every 2 min). Subjects were all fasted for 4 h fasting and rested for 20 min rest in a closed room in our hospital before testing. Breath samples were collected by slow exhalation to vital capacity through Bio-Voc breath sampler® (Markes International, UK) which collected into two-bed carbon thermal desorption tubes. They were later analysed by gas chromatography-mass spectrometry (GC-MS). We selected Isoprene and Total eVOCs minus Isoprene as markers of variability. Isoprene is a ubiquitous eVOC linked to cholesterol metabolism, with levels linked to exertion patterns. Variation in the three repeat measurements was determined by a coefficient of variation over the samples (SD as % of mean) and dividing the area under the curve (AUC) in second and third measurement by the first sample. A single researcher took all samples and a single scientist ran the GC-MS.

Results There is substantial intra-individual variation in level of total VOCs and Isoprene and total VOC over three breaths in controls and COPD. Isoprene tended to fall in repeat sampling, most strongly in the controls, while total eVOCs increased in the second breath but fell in the third.

Discussion Intra-subject variation in eVOCs profile poses important challenges and normal ranges and acceptable limits of variation need to be set as repeatability is an important characteristic for any diagnostic test. These particular changes may reflect changes in eVOCs production due to increased oxidative stress or muscle metabolism or haemodynamic changes and metabolism induced by exhalation. Further research to explore eVOCs variability and its impact on their diagnostic potential is needed.

Abstract P49 Table 1

Coefficient of variation	COPD	Control	Overall	Range
Isoprene	23	26	24	2–64
TVOC-isoprene	40	40	40	12–104

% Change from reading 1	COPD 2/1	COPD 3/1	Control 2/1	Control 3/1
Isoprene				
Median	−7	−25	−24	−32
Mean (geometric)	−10	−26	−22	−37
TVOC-isoprene				
Median	+14	−6	+20	−30
Mean (geometric)	+9	−6	+3	–

TB: from diagnosis to management

P50 A SUMMARY OF STRAIN TYPING AND CLUSTERING OF TB IN LONDON IN 2010 AND AN ANALYSIS OF THE ASSOCIATED RISK FACTORS

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Since January 2010 prospective strain typing on all positive TB samples able to be cultured has occurred. Recent infection is presumed if the strain of TB isolated from the case is indistinguishable from one or more others in the population studied. Recently infected cases are likely to be part of clusters. All data are currently preliminary. In London from January to September 2010, 2679 cases were reported to the London TB Register, 36% of which were culture confirmed. Of those that were culture confirmed 37% were in a cluster. Adults were more likely to be culture confirmed than children (37% vs 23%). While children may be less likely to be culture confirmed, those who were culture confirmed were more likely to be clustered (and so recently infected). Comparing children (0–15 year olds) to young adults (16–24 year olds), 70% compared to 40% were clustered (OR 3.49, p=0.003). Overall more clustering was noted among males (39% vs 33%, OR 1.28, p=0.08), white (40%) and black-Caribbean (47%) ethnic groups, UK born cases (42% vs 36%), and those with pulmonary (45% vs 30%) and sputum smear positive disease (56% vs 38%). More clustering was seen with those who had social risk factors: history of drug use (46%), homelessness (49%), imprisonment (47%), and alcohol abuse (46%).

The majority were in clusters with <5 cases and therefore did not reach the HPA cluster investigation threshold of =5 cases in 24 months. Data will be presented for the entirety of 2010, therefore numbers are subject to change.

P51 TUBERCULOSIS OUTCOME FOLLOWING PRE-TREATMENT ASSESSMENT FOR DIRECTLY OBSERVED OR SELF-ADMINISTERED THERAPY: STILL ROOM FOR IMPROVEMENT?

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Setting and Methods London has high rates and large numbers of TB notifications. Treatment completion is generally <85% (the figure recommended by the WHO to achieve effective control). NICE TB guidelines (2011) advise using risk assessment to identify those individuals most likely to non-adhere to therapy and hence who require enhanced case management, including directly observed therapy (DOT), to complete treatment successfully. The North Central London TB Network piloted a risk assessment tool, derived from reported risk factors predisposing to non-adherence plus information from a patient profile study undertaken across London, in a cohort of 306 TB patients starting treatment between June and December 2008. On the basis of the individual's risk of non-adherence score they were broadly allocated to DOT or self-administered therapy (SAT). Here we evaluate treatment outcomes (completion and need for re-treatment) using the London TB register (LTBR) and individual case records.

Results Subjects receiving SAT had excellent treatment completion rates (91%), with 3% lost to TB service follow-up (Abstract P51 table 1). Those on DOT had a lower completion rate—which at 80% was less than the international standard. Ten per cent of DOT subjects were lost to follow-up (all after transfer out of NCL TB service care). Death rates were threefold higher in the DOT group. After 20 months median follow-up post treatment completion, 3 SAT and 0 DOT patients had been re-treated for TB.

Abstract P51 Table 1

	DOT (n=30)		SAT (n=276)	
Completed in NCL TB service	**21**	**70.0%**	**233**	**84.4%**
Died				
TB	1		2	
Not TB associated	0		4	
Unknown	1	6.7%	0	2.2%
Lost to follow-up	0		5	1.8%
Stopped	1	3.3%	8	2.9%
Transferred out				
LTBR				
Completed	**0**		**12**	**4.3%**
Lost to follow-up	1	3.3%	0	
Non LTBR				
Completed	**3**	**10.0%**	**4**	**1.4%**
Lost to follow-up	2	6.7%	1	0.3%
Overseas				
Completed	**0**		**1**	**0.3%**
Lost to follow-up	0		6	2.2%
Total completed	**24**	**80.0%**	**250**	**90.5%**

Conclusions The risk assessment tool appears to discriminate those patients who can receive SAT; though it should be noted that re-treatment was only required in this group—suggesting possible poor adherence with therapy in some individuals. Subjects on DOT did well within NCL TB service, but were too often lost to follow-up if transferred elsewhere. It is unclear whether this reflects inadequate local data collection and communication by, and with, our service, or genuine loss from healthcare. Either way, this requires urgent attention. The planned introduction of enhanced case management within the London TB model of care may improve this.

P52 RISING PAEDIATRIC TUBERCULOSIS IN GREATER MANCHESTER: EPIDEMIOLOGY AND BCG VACCINATION STATUS OF CASES

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Background Tuberculosis cases in Greater Manchester (GM) have increased annually since 2004. The Paediatric TB clinic at Royal Manchester Children's Hospital has grown since its inception in 2004, but it is unclear as to whether this is due to a true increase in cases or a change in referral patterns. At the same time the uptake of BCG vaccine is sub-optimal.

Objectives To investigate the incidence, epidemiology and BCG vaccination eligibility and status of childhood tuberculosis cases in GM between 2006 and 2010.

Methods All children (≤16 years) notified through the Enhanced Tuberculosis Surveillance System between 1 January 2006 and 31 December 2010 were identified. Vaccination records were obtained from Primary Care Child Health Systems. Missing data were supplemented with examination of case-notes. Eligibility for BCG vaccine was determined by place of birth and ethnicity.

Results 215 children (89 male; mean age 8.8 years) were notified over the 5 years. A rise of 64.5% in overall number of cases was reported from 2006 to 2010. Pakistanis comprised 39.1% of TB cases, Black Africans 28.8% and white British 14.9%. The majority of children were UK-born (60.5%). Of non-UK born cases 67.1% entered the UK within 2 years of their diagnosis. Of 130 UK-born children, 111 were deemed eligible for BCG vaccination. Of these 85 (75.6%) received the vaccine. Of 85 children born outside the UK, vaccination status could not be determined in 8, and one child was ineligible for vaccination. Vaccination was confirmed in 53% of non-UK born children (BCG record or BCG scar). In children who had not received BCG, although the number of cases was very small, a threefold higher risk of more severe forms of infection (military, CNS involvement) was identified.

Conclusion There has been a significant rise in incidence of Paediatric TB in GM over the last 5 years. The reason for this remains unclear. However, BCG vaccination uptake rates were poor (75% of UK born individuals and 67% overall). Systems for identifying eligible children and immunising them need to be reviewed and strengthened both for high risk neonates and children entering the country.

P53 OUR EXPERIENCE OF AVOIDING UNNECESSARY BRONCHOSCOPIES BY USE OF SPUTUM INDUCTION FOR THE INVESTIGATION OF SUSPECTED TUBERCULOSIS

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Introduction The majority of cases of pulmonary tuberculosis (pTB) are diagnosed by microscopy and culture of sputum. When a patient is unable to produce sputum spontaneously, further procedures are required to obtain suitable samples for examination. There is debate