positive ≥15 mm for those with prior BCG. Children with borderline or positive Mantoux test results, or in whom there was clinical concern, were referred for consultant assessment and/or IGRA (Quantiferon Gold). Data were collected retrospectively from case notes.

Results 976 children were referred. 756 completed initial assessment (388 (51%) male, mean age 6.2±4.6 years, range 0.16–16.36 years). BCG history was known in 754 (99.7%; 516 BCG). 403 patients were discharged without intervention, 63 were offered BCG vaccination, two were referred elsewhere and 288 were referred for consultant assessment. Of these 288, 108 were notified with TB, 46 received chemoprophylaxis, 117 received no treatment, 5 received BCG and 12 failed to attend. 252 children had paired Mantoux and IGRA. Of these, 18/44 (41%) of those with a borderline Mantoux had a positive IGRA. 126/252 had TB infection (91 active and 35 latent TB)—see Abstract P175 table 1. A Mantoux threshold of ≥15 mm identified 77 (61%) children with TB infection, IGRA identified 92 (73%) and the two tests combined identified 100 (79%) children.

Abstract P175 Table 1 Mantoux and IGRA in children with TB infection

	GIFN negative	GIFN indeterminate	GIFN positive	Total
Mantoux neg	18	1	5	24
Mantoux borderline	6	1	18	25
Mantoux positive	5	3	69	77
Total	29	5	92	126

Conclusion Using a Mantoux threshold of ≥15 mm induration significantly underestimates the number of children with TB infection compared with using Mantoux and IGRA together.

P176 DOES BCG PROTECT AGAINST ATOPIC DISEASES ONLY FOR A LIMITED TIME PERIOD?

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Allergic diseases such as atopic asthma are believed to have their origins in early life[1] but the precise mechanisms and timings of the relevant immunoregulation continue to be a focus of research. One area of investigation has been the role of vaccinations in Th cytokine regulation.[1] Epidemiological studies investigating the potential of BCG, a potent immunomodulator, to reduce the risk of atopic diseases report conflicting results.[2] A Manchester study (MANCAS), using a cohort of children all born in the same hospital in the mid 1990s identified a lower risk of wheeze for children given neonatal BCG.[3] Data analysis for a follow-up study 6 years later when the cohort was aged 13–17 yrs has just been completed. Using the same definitions for wheeze and asthma as the first study there was no difference in prevalence of wheeze or asthma between BCG vaccinated and non-vaccinated adolescents (Abstract P176 table 1). Significance tests between the studies were not performed because some participants responded only to one of the two studies. A Medical Research Council study[4] in the 1950s investigating the effectiveness of a vaccination programme to prevent tuberculosis identified a progressive decrease in the efficacy of BCG in successive 5 year periods with 80% efficacy 5 years post vaccination reducing to 59% 10–15 yrs after vaccination. If the decrease in efficacy of BCG modifies its ability to protect against atopy it may be that the conflicting results in studies investigating BCG and atopy have occurred because the protection afforded by BCG is limited to within a timeframe after vaccination.

Abstract P176 Table 1 Asthma/wheeze prevalence

	Asthma (3KQ)	Asthma (3KQ1MoS)	Wheeze
MANCAS1 n=2414/5086			
NN BCG	21.6% (201)	13.6% (126)	17.2% (168)
No BCG	26.2% (266)	17.5% (176)	23.2% (250)
	p=0.02	p=0.02	p<0.01
MANCAS2 n=1608/6338			
NN BCG	17.0% (123)	10.7% (77)	15.9% (112)
No BCG	16.3% (120)	11.4% (84)	14.4% (103)
	p=0.69	p=0.66	p=0.44

REFERENCES

1. **Marchant,** *et al*. T cell-mediated immune responses in human newborns: ready to learn? *Clin Exp Immunol* 2005;**141**:10–18.
2. **Arnoldussen,** *et al*. BCG vaccination and allergy: a systematic review and meta-analysis. *JACI* 2011;**127**:246–53.
3. **Linehan,** *et al*. Is the prevalence of wheeze in children altered by neonatal BCG vaccination? *JACI* 2007;**119**:1079–85.
4. **Medical Research Council.** BCG and vole bacillus vaccines in the prevention of tuberculosis in adolescence and early adult life. *Bull WHO* 1972;**46**:371–85.

P177 EVOLUTION OF LUNG FUNCTION IN PRIMARY CILIARY DYSKINESIA: A TWO CENTRE RETROSPECTIVE STUDY

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Background Evolution of spirometry in primary ciliary dyskinesia (PCD) and its determinants are unclear. To assess morbidity and burden of this condition, we investigated the progression of spirometry in patients from two European centres.

Methods Ninety-six patients with =1 spirometry (Naples, Italy, n=21; London, UK, n=75) were enrolled. Sixty-five (Naples, n=15; London, n=50) with 4 years spirometry were analysed longitudinally. Best annual FEV_1, corresponding FVC, both expressed as z-scores, and sputum culture results were recorded.

Results In Naples and London, age at referral to the centre was 9.8 (range, 0.1–20.2) and 6.1 years (range, 0.1–17.3), respectively (p=0.02), while age at first spirometry was 11.6 (range, 8.1–20.2) and 8.4 years (range, 4.2–17.3), respectively (p<0.001). In both centres patients with situs in versus (Naples, n=15; London, n=36) were referred earlier (p<0.001). Despite later diagnosis, Naples children had better baseline FEV_1 and FVC z-scores (−0.53 (1.60) vs −1.66 (1.35), and 0.50 (1.55) vs −1.36 (1.32), p<0.001 respectively) when first seen. Slopes of FEV_1 z-scores over 4 years were −0.05 (95% CI −0.36 to 0.26) and 0.05 (95% CI −0.05 to 1.65) in Naples and London, respectively (p=0.38). No significant correlation was found between slopes of FEV_1 z-scores and age at referral or baseline FEV_1 z-score. *Haemophilus influenzae* was the most frequently isolated pathogen (95% and 79% of subjects in Naples and London, respectively, p=0.1). Naples subjects had higher prevalence of *Pseudomonas aeruginosa* (62% vs 36%, p=0.04). *P aeruginosa* isolation was not associated with worse baseline FEV_1 z-scores or slopes of FEV_1 z-scores.

Conclusions The better lung function despite later diagnosis in Naples is apparently unexplained. However, as spirometry in PCD is stabilised during treatment, its short-term evolution is not related to age at referral or to baseline FEV_1. Spirometry is thus not a useful end-point for randomised controlled trials of treatment. Late diagnosis is common for patients without *situs* anomalies. Although the potential impact of *P aeruginosa* infection on PCD lung function is unclear, its unexpectedly high prevalence merits further study to determine best prevention and management strategies.

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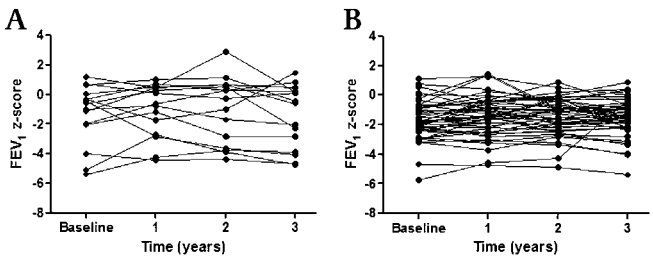

Abstract P177 Figure 1 Evolution of FEV_1 z-scores over 3 years in patients from Naples (A, n=15) and from London (B, n=50).

Improving the investigation of suspected respiratory disease

P178 THE EFFECT OF BAL INDUCED INFLAMMATION ON NASAL INNATE DEFENCE – REDUCTION IN EXPERIMENTAL HUMAN PNEUMOCOCCAL CARRIAGE

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Introduction and Objectives BAL causes pulmonary inflammation post procedure. It is not known if the inflammation affects the upper respiratory tract and nasal mucosa. We have developed an experimental human pneumococcal carriage (EHPC) platform. We wished to establish if prior bronchoscopy was associated with altered carriage rates in EHPC.

Methods Participants were screened for natural carriage of pneumococcus by nasal wash. **Group A** then proceeded to **inoculation** 7 days after initial screening whereas **Group B** underwent **bronchoscopy** with BAL prior to inoculation. Bronchoscopy with BAL was performed using fibre optic bronchoscope and instillation of 200 ml 0.9% saline in 50 ml aliquots followed by immediate manual aspiration via the working port of the bronchoscope. Participants were inoculated with 6B or 23F *S pneumoniae* (15 000–60 000 CFU/ml) within 14 days of bronchoscopy. Carriage was determined by the presence of pneumococci in nasal wash samples at 48 hr and/or 7 days post inoculation.

Results Thirty-seven participants were recruited, of which 19 proceeded to BAL prior to inoculation; 22 were inoculated with 6B and 15 with 23F. Baseline characteristics were not significantly different between Group A and B. Neither group had any symptoms at the time of inoculation. Both Group A and B were subdivided into 23F or those that received 6B. The inoculum dose was not significantly different between the BAL groups for either 23F or 6B. The mean length of time between bronchoscopy and inoculation was 10 days (±1). Carriage rates between Group A 6B and Group B 6B were significantly different (p=0.008); this difference was not seen between Group A 23F and Group B 23F. In adults challenged with SPN, carriage rates differ by type. In an experiment with high carriage rates, there was a significant decrease in carriage rates in subjects with preceding BAL.

Conclusions This study suggests that the inflammatory process caused by bronchoscopy with BAL, as highlighted in previous research, may influence innate mucosal defence. The inflammatory effect of bronchoscopy with BAL should be accounted for in future research allowing adequate time before performing interventions which may be affected.

P179 THE CHANGING NUMBERS AND INDICATIONS OF MEDIASTINOSCOPY PROCEDURES PERFORMED FOLLOWING THE INTRODUCTION OF ENDOBRONCHIAL ULTRASOUND AT A UK TERTIARY CENTRE

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Introduction Endobronchial Ultrasound(EBUS) is a minimally invasive procedure that is being increasingly utilised in the diagnosis and management of mediastinal pathologies as an alternative to surgical mediastinoscopy. This study aimed to determine the extent to which EBUS is changing the numbers of and indications for surgical mediastinoscopy at Guy's & St Thomas' NHS Foundation Trust, a tertiary centre for EBUS and surgical mediastinoscopy.

Methods Patient records were retrospectively reviewed for two twelve-month periods, the first immediately preceding the introduction of EBUS (Phase 1), and the second commencing after a period of 15 months had elapsed (Phase 2). The numbers and indications of invasive mediastinal sampling procedures performed during each phase were determined and compared, as was the frequency of lymph node stations sampled.

Results 596 patients were included; the number of patients undergoing mediastinoscopy fell from 158 in Phase 1 to 106 in Phase 2; 332 patients underwent EBUS in Phase 2. There was significant reduction in mediastinoscopies performed to stage lung cancer (64% reduction; p<0.001), confirm suspected lung cancer (40% reduction; p<0.001); and diagnose granulomatous disease (60% reduction; p<0.001); however, there was a 47% increase (p<0.001) in mediastinoscopies performed to diagnose mediastinal lymphadenopathy unrelated to lung cancer. In Phase 2, EBUS accounted for 81% of lung cancer staging procedures, 85% of procedures confirming suspected lung cancer, and 84% confirming granulomatous disease. Nodal stations 4R/L and 7 were most frequently sampled by both procedures, while access to stations 10R/L and 11R/L by EBUS accounted for 20% of all stations sampled in Phase 2.

Conclusion The introduction of EBUS has reduced the use of surgical mediastinoscopy, but also increased the total number of mediastinal sampling procedures performed. Mediastinoscopy use has significantly fallen for all indications that are amenable to EBUS-directed sampling.

P180 ELECTROMAGNETIC NAVIGATION BRONCHOSCOPY AS A DIAGNOSTIC METHOD IN RESPIRATORY MEDICINE: EARLY CLINICAL EXPERIENCES

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Introduction and Objectives Electromagnetic navigation bronchoscopy (ENB) is approved for use as an adjunct to conventional bronchoscopy, aiding the diagnosis of peripheral lung lesions. It is a modern technique which improves bronchoscopic yield, thereby potentially preventing unnecessary operations or high-risk procedures. Our objective was to assess the use of this technique in regular clinical practice, and to identify factors which may influence its success.

Methods A retrospective data analysis of all ENB procedures carried out in a 120-bed speciality respiratory hospital in Solingen, Germany, between 2007 and 2011 revealed a total of 43 procedures. In each case, size and anatomical location of the tumour based on CT findings were noted. A positive result was documented if as a result of the procedure a clinical diagnosis could be reached.

Results ENB reached a clinical diagnosis in 15 of 43 patients (34.9%); eight malignant tumours, seven benign lesions, 28 left unclear. Of these 28, further investigations revealed a malignant process in nine

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