challenge. Nijmegen questionnaire is suitable as a screening tool for early detection and also as an aid in diagnosis and therapy planning.
Aim To test the correlation between the Nijmegen score and the hospital anxiety/depression score in patients diagnosed with dysfunctional breathlessness.
Method The diagnosis was made on the basis of exclusion with a normal clinical examination, lung function and echocardiogram, or with symptoms disproportionate to measurements of severity of their respiratory illness. The physiotherapist further assessed patients with particular regard to their breathing pattern and the Nijmegen (Ni) score, with a score over 23 being regarded as diagnostic. Consecutive patients referred to the clinic over 24 months were reviewed. The following parameters were analysed- demographics, underlying respiratory illness, breathing and sleep pattern, Nijmegen score (Pre and Post Intervention), HAD scores and the interventional modalities.
Results 51 patients (males 20, females 31) were assessed. The mean age at presentation was 60.2 (range 20–84). 26/51 patients had chronic cardio respiratory illness. 28/51 patients had an abnormal breathing pattern, the most common being frequent sighing. 23/51 patients reported abnormal sleep pattern, frequent awakening being the commonest. 37 patients (males 17, females 20) had a pre intervention Ni score over 23 (mean 29, range 23–42). Interventions included patient education, cognitive–behavioural therapy, breathing exercises and training in a physiotherapist led clinic. The interventional period was 6 weeks and post 6 weeks the Nijmegen score fell below the diagnostic threshold in 29/37 patients (mean reduction 14, range 3–22, p value<0.001). HAD scores was used to assess the degree of mood impairment and there was no linear correlation (Pearson correlation) (Abstract P203 table 1) with the pre intervention Nijmegen score.

Abstract P203 Table 1

(n=37)	Nijmegen score	Anxiety score	Depression score
Nijmegen score			
Pearson Correlation	1	0.362	0.171
Sig. (2-tailed)		0.28	0.311
Anxiety score			
Pearson Correlation	**0.362**	1	0.405
Sig. (2-tailed)	0.28		0.013
Depression score			
Pearson Correlation	**0.171**	0.405	1
Sig. (2-tailed)	0.311	0.013	

Conclusion There was no correlation between the Nijmegen score and the hospital anxiety/depression score in patients with dysfunctional breathlessness. A physiotherapy led dysfunctional breathlessness clinic was able to improve symptoms in 78% of the referred cases as measured by Ni score.

P204 THE BURDEN OF REPEATED ASTHMA ADMISSIONS AND ASSOCIATIONS WITH PSYCHIATRIC COMORBIDITY

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Rationale and Objectives While only 10% of asthmatics have "Difficult Asthma" they account for 80% of asthma-related expenditure. Aggravating comorbidities are common in patients with Difficult Asthma including Psychiatric disorders, such as major depression, which is present in 29%.[1] We sought to characterise the annual burden of repeated asthma admissions to our Hospital and assess the influence of psychiatric comorbidity on this group with Difficult Asthma.
Methods We systematically searched the hospital database for patients who had been acutely admitted on two or more occasions in 2010 for asthma at Southampton General Hospital (Southampton, UK). Data were collected retrospectively and covered patient demographics, admission details, asthma severity, physical and psychiatric co-morbidity. Coding data for each admission was analysed to determine admission costs. Data were analysed using SPSS (V.19.0) to determine significant characteristics of this Difficult Asthma group and to assess the influence of psychiatric comorbidity on those parameters.
Results There were 396 admissions for acute asthma in 2010, involving 305 patients. Of these, 36 (11.8%) patients were admitted on =2 occasions, accounting for 32.1% of admissions. Repeated admission patients consumed 895 bed-days and were predominantly female (72.2%; p=0.012). They commonly had aggravating comorbidities, the most predominant being diagnosed psychiatric disease (69.4%; p=0.03). Those patients with psychiatric comorbidity showed significantly higher Body Mass Index (p=0.012), plus greater prevalence of obesity (p=0.05) and dysfunctional breathing (p=0.012) than patients without psychiatric comorbidity. They also showed trends for higher prevalence of other aggravating comorbidity like Gastro-Oesophageal Reflux Disease (p=0.07) and for greater median bed-days/length of stay. The annual cost for repeated asthma admission was £226 536 of which patients with psychiatric comorbidity consumed £164 660 (72.7% of costs).
Conclusions A significant proportion of patients with repeated asthma admission have psychiatric comorbidity. When present in such patients, psychiatric comorbidity is associated with obesity and dysfunctional breathing. Patients with Difficult Asthma and psychiatric comorbidity pose a significant burden on Secondary Healthcare resources. Optimal asthma care could benefit from targeting support and treatment for underlying psychiatric illness.

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P205 MANAGING THE CHALLENGES OF RECRUITMENT OF PATIENTS WITH ASTHMA TO RANDOMISED CONTROLLED TRIALS

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Introduction Many trials do not recruit sufficient participants, particularly from primary care settings, making it difficult to get meaningful results. A recent Cochrane systematic review studying recruitment concluded there is still much to learn. Here we describe details of two MRC funded, primary care based, asthma randomised controlled trials, and their recruitment strategies and challenges.
Methods Trial 1: Examined whether short-term treatment with atorvastatin improves lung function, asthma control and quality of life in smokers with asthma (completed 2009). Trial 2: examined the same question using azithromycin (completed July 2011). The participant flow charts and trial documents of both trials were examined to establish recruitment details.
Results Trial 1: Target to randomise =80, target to complete =68, study extended by 3 months due to slow recruitment. Actual randomised =71, actual completed =60. 54/438 GP practices approached, participated. 2483 patients from practices and 356 from a database of previous trial participants received two mailings via GP surgeries, and then following an ethics amendment via telephone for a small number of surgeries. 331/2483 (11.7%) patients responded positively, and of these 286 were able to be contacted and telephone screened for eligibility, leaving 131 eligible participants. 129/131

attended a screening visit; 58/129 screen failed (eg, due to deterioration in peak flow, unable to wean off regular asthma medications) leaving 71 randomised (2.5%) of total patients invited. Trial 2: similar picture, completed July 2011, extended by 6 months due to slow recruitment. Target to randomise =80, target to complete =68. Actual completed: 71/8398 (<1%) of those invited.

Conclusion Achieving the completion target in randomised controlled trials requires significant administrative support, and the capacity to increase support should difficulties in recruitment be encountered. Closer partnership with primary care practitioners, better access to primary care patient databases and direct contact with potential recruits can overcome this. Loss of potential recruits during the run-in phase needs exploration, and is of significant importance to improve the efficiency of screening to randomisation. Addressing these issues will mean fewer trials are underpowered and hence provide better return for grant awarding bodies.

P206 PSYCHOLOGICAL COMORBIDITY IN VOCAL CORD DYSFUNCTION

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Background Vocal Cord Dysfunction (VCD) is typically reported to affect young females and has been associated with a psychiatric history. We run a multidisciplinary-based service for VCD patients with input from specialist speech and language therapy, physiotherapy and psychology. We investigated the demographics of our patient cohort with VCD, its association with anxiety and depression and whether this affected treatment response.

Methods All patients referred for specialist speech and language therapy at the Royal Preston Hospital Airways Clinic between June 2006 and May 2011 with VCD confirmed by endoscopy were included. During routine clinical care data were collected including demographic details and comorbidities. Patients were also asked to complete the Hospital Anxiety and Depression (HAD) questionnaire. Subjective symptomatic improvement was recorded at patient follow-up visits.

Results A total of 95 patients were eligible for study inclusion: 73.7% were female with a median age of 53 (17–83) years while men were older at 59 (37–80) years. Medical comorbidities included asthma (56.8%), reflux (47.4%), chronic cough (17.9%), nasal disease (16.8%) and neurological disease (12.6%). A history of confirmed psychiatric disease was noted in 38.9%. In 43 patients who completed HAD scores, moderate or severe anxiety was found in 41.8% and depression in 23.3%. Response to treatment was excellent (67% showing clinical improvement) and this was independent of medical or psychological comorbidity.

Conclusions Our data suggest that VCD affects a wide range of patients, in terms of age, gender, comorbidities and HAD scores which do not impact on treatment response, as a result of the multidisciplinary approach and this success is comparable to most asthma therapies when patient compliance and education are accounted for. It challenges many previously held concepts and supports a multidisciplinary approach to treating VCD.

P207 DOES THE NIJMEGEN CORRELATE TO THE D12 WHEN USED AS AN OUTCOME MEASURE IN PATIENTS WITH BREATHING PATTERN DYSFUNCTION

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Introduction Breathing pattern dysfunction (BPD) in patients with and without respiratory disease is linked to disproportionate dyspnoea. Asthma patients in particular have a high prevalence of BPD. The Nijmegen questionnaire (NQ) is a validated outcome measure in patients with no underlying respiratory pathophysiology, not in patients with organic disease. There is no validated tool that can be used to assess the effectiveness of breathing retraining in patients with BPD. The Dyspnoea-12 (D12) questionnaire provides a global score of breathlessness severity and is validated in respiratory disease, but not in patients with BPD. The aim was to correlate the D12 to the NQ and assess its use as an outcome measure for patients with BPD. Pre and post scores were compared to assess the effectiveness of Physiotherapy breathing retraining on patients with BPD referred to our tertiary centre.

Method We included all Physiotherapy referrals to the outpatient department of the Royal Brompton Hospital for BPD between January and July 2011. The D12 and NQ were completed before and after 3 Physiotherapy interventions and respiratory rate was also measured.

Results Initial data were available for 26 patients: mean (SD) age 47.6 yrs (13), 16 (62%) female, 13 (50%) had a diagnosis of asthma. Post intervention data were available for 17 (65%) patients. Respiratory rate did not correlate with the NQ or D12 in any of the groups. There was a statistically significant correlation between the NQ and D12 both pre ($p=0.0017$, $R=0.59$) and post ($p=0.0156$, $R=0.58$) intervention. A statistically significant difference pre and post intervention was shown in the NQ ($p=0.0242$ mean (SD)=7.35 (12.1)) and the D12 ($p=0.0127$).

Conclusion The data suggests that breathing retraining provides both a clinically effective and statistically significant improvement in symptoms of patients with BPD. There was a significant correlation between the D12 and NQ scores in patients referred with BPD. This highlights that the D12 may be an appropriate outcome measure in this patient population.

P208 OBESITY AUGMENTS CIRCULATING NEUTROPHIL LEVELS IN ASTHMA

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Introduction Mechanisms underlying the association between obesity and asthma are not well understood. Obesity is characterised by chronic inflammation and adipose tissue, comprising up to 50% pro-inflammatory cells, produces many pro-inflammatory cytokines and hormones (adipokines). Enhanced systemic inflammation might provide the causal link between obesity and asthma. Although there are good mechanistic data that obesity can augment innate immune function and promote immune dysregulation by reducing regulatory T cell (Treg) numbers there is little work in this area in relation to asthma.

Methods A case-control study is being conducted examining six groups of pre-menopausal women (n=120): normal weight (BMI 20–25 kg/m^2), overweight (BMI 25–30 kg/m^2) and obese individuals (BMI >30 kg/m^2) with and without asthma. Asthma diagnosis was physician confirmed, and severity graded. Measures of adiposity, lung function and blood were collected during menstruation. Automated haematology analysis was used to quantify major cell types and chemiluminesence to measure whole blood reactive oxygen species generation following stimulation. Flow cytometry was used to examine major lymphocyte subtypes including Treg cells. A number of circulating cytokines and adipokines will be measured on sample collection completion.

Results Interim analysis of 36 individuals revealed a significant increase in circulating total leucocytes with increasing BMI which is more pronounced in asthmatics compared with controls ($p=0.022$). This appears to be due to a significant increase in neutrophils