

G161(P) RETROSPECTIVE ANALYSIS OF THE ESTABLISHMENT OF NON-INVASIVE VENTILATION IN CHILDREN

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Aims Non-invasive ventilation (NIV) is now an established treatment for children with sleep disordered breathing. We report our experience of starting children on NIV over 12 years and aim to identify areas for future improvement.

Methods We retrospectively analysed the data of all children we attempted to establish on NIV in our centre between July 2000 and July 2012. We noted the clinical indication, whether NIV was successful and, if available, any sleep study results obtained.

Results NIV was attempted in 122 patients. 46 (37.7%) had obstructive sleep apnoea (21 related to obesity); 26 (22.1%) neuromuscular disease (2 additional children with SMA1 had a brief trial of NIV); 16 (13.1%) Down's syndrome; 11 (9%) craniofacial or skeletal disorders; 7 (6%) central hypoventilation; 5 (4%) mucopolysaccharidoses; 8 (7%) had other disorders.

66/122 had pre and post-establishment oximetry performed with 92.4% showing improvement in desaturation index (DSI) (mean DSI was 20.7 pre-establishment, and 2.5 post-establishment, $p < 0.01$).

111 children (91%) were successfully discharged from hospital on NIV. Of 11 children who failed to establish 7 had Down's syndrome, 2 others had SMA1 and the families chose not to proceed. Median patient age was 10.61 years (range 0.71–18.17), whilst median age of those that failed to establish was 5.95 years.

Of 111 children discharged on NIV, 12 (10.8%) stopped due to poor acceptance of treatment (4 of these had Down's syndrome), 54 (48.6%) continue on NIV within paediatrics, 20 (18%) have transferred to adult services, 9 (8.1%) have stopped due to an improvement in their medical condition over time, 7 (6.31%) stopped as no clinical improvement was achieved with therapy, 6 (5.41%) have died and 3 (2.7%) have been lost to follow up.

Conclusion Overall long-term success rates of NIV were high, with the majority of children continuing on ventilation under paediatric or adult services or stopping due to clinical reasons. The main reason for failure of establishment or maintenance was non-acceptance. This was significantly greater in children with Down's syndrome and new strategies must be found to improve acceptance with these patients.

G162(P) WHAT PREDICTS DURATION OF HOSPITAL STAY FOR BRONCHIOLITIS?

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Background Bronchiolitis is a common lower respiratory tract infection of infancy. In the UK, 3% of all infants are hospitalised with bronchiolitis and this places a considerable burden on the NHS every winter. An admission costs £600/day in our institution. Identification of factors associated with the duration of hospitalisation with bronchiolitis may be of interest to clinicians and healthcare commissioners and this was the aim of the present study.

Methods Data were collected from infants aged up to 6 months and admitted to hospital with a diagnosis of bronchiolitis during the winters 2003/4–2010/11 inclusive. The outcome was duration of stay (hours). Predictive variables included weight, age and observations on admission, gender, socioeconomic status, distance from home to hospital, number of infants admitted that winter and winter of admission. A clinical pathway was introduced after winter 2004/5¹.

Results Data were available in 382 infants, 322 were RSV positive. The median (IQR) duration of stay was 66 hours (38, 99). Initial

univariate analyses indicated that the following were positively associated with duration of stay: younger age (Rho-0.31), lower weight (Rho-0.31), increased heart (Rho0.17) and respiratory rate (Rho0.18), detection of RSV (mean duration of stay 84 for RSV positive vs 48 hours for RSV negative) and smaller number of infants admitted that winter (Rho-0.17). The duration of stay also varied by year and was reduced after introduction of the clinical pathway¹. In the multivariate analysis ($R^2 = 0.29$, $n = 347$), the following remained significantly associated with log transformed duration of stay: respiratory rate ($p = 0.003$), infant weight ($p < 0.001$), RSV detected ($p < 0.001$) and winter of admission ($p < 0.001$).

Conclusions The duration of stay for bronchiolitis, measured over eight successive seasons, appeared to be partly driven by host and pathogen factors. There are differences between years, e.g. a "busy" season, introduction of a clinical pathway which may lead to a reduction in duration of stay. However, most of the variation in the duration of stay within this population was explained by variables not measured and may include random factors.

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G163(P) RECURRENT LOWER RESPIRATORY TRACT INFECTION (LRTI) IN CHILDREN WITH REPAIRED TRACHEOESOPHAGEAL FISTULA (TOF)

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Aim To identify if patients with repaired TOF have increased risk of recurrent LRTI.

Methods We reviewed the medical records of all children who had repaired TOF over the last 20 years (1990–2011) in our centre. We identified the children who presented with recurrent LRTI. We reviewed their medical records and radiological tests and findings.

Results 82 children had repaired TOF over 20 years period. Age range from 1 – 20 years old post repair period. 18 children (22%) had recurrent LRTI and needed regular courses of antibiotics. 10 out of 18 children had high resolution CT scan (HRCT) of the chest and 3 of them (4%) had confirmed bronchiectasis.

Conclusion While tracheomalacia is a well recognised complication of TOF repair, there is paucity of data regarding the increased risk of LRTI. One recent study demonstrated increased cough with sputum production and chronic bronchitis in repaired TOF. (*Acta Paediatr.* 2011 Sep; 100(9):1222–5).

In our study we found increased risk of recurrent LRTI in children with repaired TOF (one fifth of the patients). The incidence of bronchiectasis was 4%. These findings highlights the importance of awareness of the long-term respiratory complications in children with repaired TOF.

G164(P) LOCAL DEMOGRAPHIC OF PAEDIATRIC ASTHMA VISITORS AT ACCIDENT AND EMERGENCY AT A DISTRICT GENERAL HOSPITAL

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Aims According to Asthma UK: an estimated 75% of admissions are avoidable. Although, national data is available there is paucity of local data. We have aimed to produce a local demographic of asthma

visitors at a district general hospital as a part of an improvement project.

Methods This is an observational study in which 414 children under the age of 18 in the year of 2011 were identified according to a diagnosis of either viral induced wheeze (VIW) or asthma. Database tools were used to parse the data and stratify the repeat visitors. An automated system was established for future use. Patient outcomes and management offered on discharge were noted and compared to British Thoracic Society (BTS) discharge guidelines.

Results

1. Out of 414 children, 353 attended accident and emergency (A&E) once, whereas 61 (15%) children attended repeatedly (≥ 2 visits) due to Asthma or VIW. Out of 513 visits there was an average admission rate of 21%.
2. There was no seasonal variation in admission rates between single and repeat visitors.
3. Less than 5% of children with repeat visits were given personalised written plans as recommended by Asthma UK.

Abstract G164(P) Table 1 Analysis of the data

Frequency of visits to A&E	Number of patients 2011	Total A&E visits	Admissions in individual groups	Non admissions in individual groups
Single	353	353	71 (25%)	282 (75%)
Repeat (≥ 2)	61	160	34 (21%)	126 (79%)
Total	414	513	105 (21%)	408 (79%)

Conclusion Asthma is the most common chronic medical condition affecting childhood in the United Kingdom. A 21% admission rate in repeat visitors is high in comparison to good units and the majority of patients were not discharged according to BTS discharge guidelines. Furthermore repeat visitors contribute to over 30% of all asthma related visits. Hence, we have identified a potential cost effective opportunity focussing on repeat visitors. Future projects will be aimed at improving the discharge planning process in A&E. This is particularly relevant as prior asthma admissions or A&E visits are the strongest risk factors for subsequent A&E visits.

G165(P) THE IMPACT OF A MULTI-DISCIPLINARY NEURO-RESPIRATORY CLINIC ON THE RESPIRATORY MONITORING OF CHILDREN WITH DUCHENNE'S MUSCULAR DYSTROPHY

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Aims Duchenne's muscular dystrophy (DMD) is a progressive degenerative muscular disorder that leads to respiratory failure in early adulthood. Our aim was to assess the impact of the development of a multi-disciplinary neuro-respiratory clinic and recent guidelines upon the management of patients with DMD.

Methods In February 2009, data was collected and analysed from the hospital's database of all children with DMD. Following on from this, a multi-disciplinary neuro-respiratory clinic was established. Data was re-collected and analysed in December 2012. Data was collected on the following: age, wheelchair confinement, ventilation support, pulmonary function test results and sleep study results.

Results In 2009, 47 patient were analysed, 22 were confined to a wheelchair, only 6 were under the care of a respiratory paediatrician. 20 patients had undergone lung function testing for one of the following reasons: prior to transition to adult services, as a work up for spinal surgery, subsequent to symptoms or at parent's request. The 3 patients who were receiving long term-ventilation were under care of a respiratory physician, although 4 further children were suffering from respiratory symptoms. In December 2012, 41 children

were on the database, 14 were confined to a wheelchair and 2 were receiving long term ventilation. 25 of the 41 patients were old enough for pulmonary function tests and all had had spirometry performed; 16 patients within the last year and 23 patients within the last 2 years. 5 patients had a FVC $<50\%$ and all had oxygen saturation/carbon dioxide sleep studies performed. 4 patient's sleep studies were normal and the patient whose study was abnormal was commenced on a ventilator.

Conclusion The introduction of a neuro-respiratory clinic has resulted in a significant improvement in the respiratory monitoring of children with DMD, as well as providing them with broader respiratory advice.

G166(P) AUDIT OF DENTAL CARE FOR CHILDREN WITH CYSTIC FIBROSIS

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Children with Cystic Fibrosis have special dental care needs and are at increased risk of oral diseases; such as enamel defects and formation of dental calculi.⁽¹⁾⁽²⁾ There is mixed evidence in the literature about whether dental caries are more common⁽³⁾⁽⁴⁾

Aim The aims of this audit were to:-

1. To assess access to dental care in Stoke on Trent
2. To document the frequency of dental complications
3. To investigate oral hygiene practises

Methods A ten point questionnaire was developed which was given to children who attended the Cystic Fibrosis clinic, at our unit, over a three month period

Results

20 female and 18 male patients completed the questionnaire.

Ages ranged from 10months- 16 years

94% of male patients and 85% of female patients have a dentist

Of the patients who have a dentist, 100% of male patients and 95% of female patients are seen within the recommended NICE guideline time of 12 months.

67% of male patients and 85% of female patients reported dental complications. Of these the most common complication in males (50%) and females (53%) was dental staining, followed by cavities in 17% of males and 23% females

90% of female patients and 94% of male patients brush teeth regularly.

Only 10% of female patients and 11% of male patients use dental floss.

Only one (5%) female patient used mouth wash

Conclusions Children with Cystic Fibrosis in Stoke on Trent have good access to dental care and the majority attend regularly. The majority also brush their teeth regularly. The main complications raised are with staining and with fillings. These could be combated by encouraging children to use dental floss, using fluoride based mouth washes and toothpastes, and encouraging parents to ask dentists about application of sealants. Continuing to ensure sugar free antibiotics are prescribed is also important. Dental care review should be part of the multidisciplinary management these children receive

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