children who are admitted on high flow oxygen can be weaned to low flow oxygen in under 3 months. Although no specific risk factors were identified, it was recognised that the average length of time spent ventilated in NICU was greater than for babies who were not admitted to the respiratory ward. These figures are helpful information for parents of these babies. They have formed the basis of MDT work between neonatologists and respiratory physicians to improve inpatient management

### Abstracts

#### 1117 SURVEY OF PHYSICIAN PRACTICE AND OPINIONS REGARDING THE USE OF PALIVIZUMAB AS RSV PROPHYLAXIS, INCLUDING IN CHILDREN WITH SMA TYPE 1

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**Methods**

Aims

Infants with Spinal muscular atrophy type 1 (SMA-1) may have reduced cough mechanism, impaired airway clearance and consequent risk of severe respiratory illness. Major advances in the last decade include a new, potentially curative gene therapy. Expert consensus guidelines recommend palivizumab prophylaxis for symptomatic infants with SMA-1. However, the UK Green Book Recommendations (GBR) for palivizumab do not include children with neuromuscular disease (NMD), including SMA-1.

**Methods**

A 15-question survey was compiled. Respondents were asked about their experience of using palivizumab outside of the GBR, to examine current practical use in infants with NMD, including SMA-1.

**Objectives**

We aimed to survey UK physicians on the use of palivizumab outside of the GBR, to examine current practical use in infants with NMD, including SMA-1.

**Results**

Seventeen health care practitioners completed the survey from fifteen centres across ten different UK regions. Sixteen participants indicated they used palivizumab at their centre. Five participants (29%) had arranged for palivizumab to be given to children with risk outside the standard GBR, with NMD including SMA-1 the most common indication (29%).

Nine respondents (53%) had given palivizumab to a child with SMA-1. While 41.2% had organised this as part of a standard indication, one NHS trust funded palivizumab for this group. Two respondents used palivizumab for infants with SMA-1 receiving cough assist or ventilatory support. However, four practitioners did not see role of palivizumab for this population.

Most (65%) respondents disagreed with the statement ‘palivizumab should not be given to children with NMD’. However, there was strong agreement (82%) with the view ‘there needs to be more evidence regarding use of palivizumab for children with NMD’. While 35% agreed, 47% respondents disagreed with the statement ‘it would be unethical to do large multicentre RCTs on the use of palivizumab as RSV prophylaxis in children with NMD’.

**Conclusion**

This survey highlights a variation in practice across the UK regarding palivizumab for children with NMD. Many clinical teams in the UK offer palivizumab on an individual basis beyond the GBR to children they deem to be at risk, such as those with SMA-1.

Further research would provide clinicians with the evidence base required to inform the potential use of palivizumab in SMA-1, however, clinicians have differing opinion about ethics of conducting such studies.

The GBR should be reconsidered to provide clear direction for palivizumab use in children with NMDs, including SMA-1, to provide equity of access.

**REFERENCE**


#### 1227 EXAMINATION OF DIAPHRAGMATIC THICKNESS AND EXCURSION OF PRE-TERM AND TERM INFANTS THROUGH UTILIZATION OF ULTRASOUND IMAGING

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**Aims**

The aim of the study is to measure diaphragmatic thickness, excursion, and diaphragmatic thickness fraction (DTF) among healthy preterm and term infants in order to generate control values for further studies for diagnosing diaphragmatic dysfunction, determining extubation readiness, and monitoring the impact of therapeutic interventions.

**Methods**

This was an observational cross-sectional study conducted at the Neonatal Intensive Care Unit (NICU) of Jim Pattison Children’s Hospital between June 2020- May 2021.

The study population included 25 healthy term (37+ weeks) and preterm (32 – 36/6 weeks) infants.

The inspiratory thickness was measured by placing one caliper on the top margin of the crest of the curve, and the other on the lower margin. The inspiratory thickness was measured by placing one caliper on the upper margin of the trough of the curve and the other on the lower margin. The wave height corresponded to the diaphragmatic excursion, thus one caliper was placed on the top margin of the crest and the other on the lower margin of the trough to obtain this measurement. These measures were calculated for both right and left hemidiaphragm. The diaphragm thickness fraction was calculated using the formula: DTF = (inspiratory thickness – expiratory thickness)/expiratory thickness x 100 for each infant.

**Results**

We examined a total of 25 infants with 76% male and 24% female infants ranging from gestational age of 32 weeks to 40 weeks.

The right inspiratory and expiratory thickness of the infants yielded a mean of 0.366 mm ± 0.058 and 0.213 mm ± 0.037, respectively with a mean right hemidiaphragm excursion of 0.664 mm ± 0.149. The left inspiratory and expiratory thicknesses had means of 0.389 mm ± 0.063 and 0.226

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mm ± 0.048, respectively, and a mean left hemidiaphragm excursion of 0.649 mm ± 0.143.

Conclusion Unless there is clinical suspicion of unilateral diaphragmatic dysfunction, focusing on right hemidiaphragm measurements may be adequate when assessing extubation readiness.

Aims Dysfunctional breathing (DB) has significant impacts on the quality of life, emotional well-being and functioning of children and young people, with the most common symptoms reported being shortness of breath and chest discomfort. Symptoms are often mistaken for asthma, although asthma and DB commonly occur together. A young person’s perceptions of breathlessness and the level of anxiety they experience in relation to this can further complicate their presentation.

The multifaceted nature and complexity of dysfunctional breathing problems in children and young people led to the development of a multidisciplinary paediatric breathing clinic run jointly by a specialist physiotherapist and clinical psychologist at a large teaching hospital in London. This study explored the impact of this new service on the symptoms, emotional well-being, and quality of life of those who attended.

Methods Children and young people were referred to the clinic when their history was highly suggestive of a breathing pattern disorder (BPD) or exercise-induced laryngeal obstruction (EIO) as evaluated by an experienced paediatric respiratory consultant. Referrals were made between 2017 and 2020. Following referral children and young people were jointly assessed by a specialist physiotherapist and clinical psychologist. Interventions included education on the biopsychosocial model of breathing, breathing retraining, cognitive-behavioural strategies to address anxiety and advice on diet and exercise. Young people were asked to complete a set of self-report questionnaires at assessment (time point 1) and discharge (time point 2):

- Nijmegen Scale
- Hospital Anxiety and Depression Scale (HADS)
- Pediatric Quality of Inventory (PEDS-QL)

Results 79 young people were referred to the breathing clinic within the study period. Within this cohort, there were more girls (n = 55) than boys (n = 24). The mean age at referral was 13 years (range = 9-18) and mean number of sessions provided was 4.

On examination of the self-report questionnaires at assessment (time point 1), 57% (n = 45) of young people were found to have Nijmegen scores of 20 or over (the standard cut-off in adults). 37% of young people (n = 29) were found to have HADS anxiety scores at or above the clinical threshold and 54% of young people (n = 43) reported quality of life scores at least 1 standard deviation below the norm.

Analysis of complete data at assessment (time point 1) and discharge (time point 2) revealed statistically significant improvements in Nijmegen scores (p < 0.001), HADS anxiety scores (p < 0.005) and quality of life scores (p < 0.05).

Conclusion Dysfunctional breathing problems originate and are maintained by multiple factors and, consequently, children and young people benefit from a multidisciplinary approach to their breathing difficulties. Multidisciplinary intervention was associated with significant reduction in physiological and psychological symptoms and improvements in young people’s self-reported quality of life.

REFERENCES
1. Paediatric Respiratory Reviews, N. Barker & M. Everard
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Aims Craniofacial deformities are associated with functional morbidities, such as airway obstruction. Primary management involves fronto-facial distraction surgery, intending to normalise facial appearance as well as treating cephalocranial disproportion, exorbitism, and anatomical airway compromise. This study aims to demonstrate, by using 3-Dimensional (3D) segmentation technology, the significant airway differences which result from fronto-facial distraction in paediatric patients with syndromic craniosynostosis. It further aims to illustrate that this methodology allows more variables to be analysed when compared with current conventional methods, such as computerised tomography (CT).

Methods 24 paediatric patients with syndromic craniosynostosis who underwent fronto-facial surgery between 2015 to 2021 at Great Ormond Street Hospital were included in the study. Pre- and post-op CT scans were analysed using Materialise Mimics 3D software to produce 3D software models of the upper airway (figure 1). Non-mobile skeletal landmarks were registered both on pre-and post-op CT scans to enable accurate comparison of airway changes between the two time points. 3D phantoms were generated by isolating areas with air on CT scans (-1024 to -199 Hounsfield units). Materialise 3-Matic 3D software was used to analyse airway variables: volume (total pharyngeal, nasopharynx, and oropharynx), surface area, cross-sectional area, sphericity, and proportion of airway constrictions (constricted airway was defined as areas where airway diameter was less than 4 millimetres).

Results Raw data was transformed to reflect relative changes in variables versus absolute change. This was to account for age and clinical presentation variances in the study population.