Update in paediatric lung disease

P79 CHILDREN WITH COMPLEX CONGENITAL HEART DISEASE: WHO NEEDS A PRE-FLIGHT HYPOXIC CHALLENGE TEST?

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Introduction Commercial airplanes fly with an equivalent cabin FiO_2 of 0.15 leading to reduced oxygen saturation (SpO_2) in passengers. Although guidelines exist, the evidence-base for recommending supplemental O_2 when flying in children with complex congenital heart disease (CHD) is practically non-existent. We conducted hypoxic challenge tests (HCT) to determine which children need a pre-flight assessment.
Methods Children<16 years with complex CHD were recruited; exclusions were SpO_2 <75%; pulmonary hypertension; oxygen requirement; or concomitant respiratory disease. Children had a standard HCT in a sealed body plethysmograph with FiO_2 of 0.15. We measured SpO_2, pulse rate, transcutaneous CO_2 ($PtcCO_2$), corrected QT interval (QTc), and total Hb by co-oximetry (SpHb). Supplemental O_2 was given (which meant a 'failed' test) if (1) children with baseline $SpO_2$95%–100% desaturated to 85%, (2) or baseline $SpO_2$85%–94% desaturated to 15% of their baseline; (3) or baseline $SpO_2$75%–84% desaturated to 70%.
Results There were 68 children, mean age 3.3 years (range 10 weeks to 14.5 years); 53% were boys. Grouping by normal (≥95%) *vs* abnormal baseline SpO_2(75%–94%), both groups had a significant fall in SpO_2 ($p<0.0001$). 3/38 (8%) children failed with normal baseline SpO_2 *vs* 5/32 (16%) with abnormal baseline (non-significant difference). In terms of cardiac status, both groups had a significant fall in SpO_2 ($p<0.0001$); however in those with no residual for potential R-L shunt 0/27 failed *vs* those with residual potential R-L shunt or who had not undergone repair or who had palliative surgery in whom 8/41 (20%) failed ($p<0.02$). $PtcCO_2$ did not change significantly (*i.e.*, no-one hyperventilated to compensate for hypoxia); pulse rate and QTc were not different between groups, and unaffected by the hypoxic state.
Conclusions This is the first evidence to help inform which children with CHD need a pre-flight HCT. We suggest all children with residual potential R-L shunt or who have not undergone repair or who have only had palliative surgery should be tested (as 20% are expected to need supplemental O_2), whereas those with no potential for R-L shunt need not be. Baseline SpO_2 does not help predict who will need supplemental O_2 when flying.

P80 ASSESSMENT OF ASSOCIATION BETWEEN DURATION OF OXYGEN THERAPY IN CHILDREN WITH CHRONIC LUNG DISEASE OF PREMATURITY (CLDP) AND MANAGEMENT OF PDA

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Background The presence of hemodynamically significant Patent Ductus arteriosus (PDA) is associated with the development and severity of chronic lung disease of prematurity (CLDP). Pulmonary hypertension (PHTN) is also associated with CLDP, may precede and contribute to its development and severity. We explored the relationship between the flow rate as well as the duration of home oxygen therapy (Home O2) (surrogate for severity of CLDP) in children with CLDP and interplay between the presence or absence of PDA, mode of managing PDA as well as PHTN.
Setting Tertiary CLDP service.
Methods Retrospective observational study All infants (median gestational age 26 weeks, range 23 to 35), born between 2009 and 2016, were included (n=172; 96 males). We excluded data for infants where there were incomplete records for ECHO or loss of follow-up due to management of further care in other centres. The date oxygen was discontinued by following a structured weaning protocol is prospectively recorded to calculate the length of home oxygen therapy. The presence or absence of PDA and if present whether this was managed medically or surgically as well as the presence or absence of PHTN (assessed by echocardiography) was recorded.
Results

Abstract P80 Table 1

		Number of babies (%)	Mean duration Home O2 in days (±sd)		Median oxygen flow rate in litres per minute (IQR)
PDA	Present	112	180 (±117)	p=0.637*	0.3 (0.2–0.5)
	Not present	43	189 (±150)		0.3 (0.2–0.5)
	Medically managed	39	191 (±107)	p=0.547*	0.3 (0.2–0.5)
	Surgically managed	13	168 ((±63)		0.3 (0.2–0.5)
Pulmonary hypertension	Present	19	218 ((±186)	p=0.117*	0.3 (0.2–0.5)
	Absent	124	176 (±101)		0.3 (0.2–0.5)

* no significant difference

Conclusions In our cohort, there was no significant difference between the duration of home oxygen therapy and the presence or absence of PDA and if present whether it was medically or surgically managed. Similarly, there was no significant difference between duration of home in presence or absence of pulmonary hypertension.

REFERENCE

1. Clyman, Ronald I. The role of patent ductus arteriosus and its treatments in the development of bronchopulmonary dysplasia. *Seminars in Perinatology* 2013;37 (2):102–107. *PMC*. Web. 20 July, 2017.

P81 WHAT IS THE IDEAL TARGET PRETERM POPULATION THAT MIGHT BENEFIT FROM THE EXPENSIVE PALIVIZUMAB PROPHYLAXIS?

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Introduction Palivizumab is a monoclonal antibody that reduces the likelihood of serious respiratory tract infection by Respiratory Syncytial Virus (RSV) in infants with Chronic Lung Disease (CLD) defined as an ongoing oxygen requirement at 36 weeks corrected gestation. In the UK (UK), Palivizumab is offered to high-risk infants with moderate to severe CLD according to their chronological age at the time of RSV season as per Joint Committee on Vaccination and Immunisation (JCVI) guidelines. The American Academy of Paediatrics, in contrast, recommends Palivizumab prophylaxis for all infants born before 29 weeks' gestation who are younger than 12 months at the start of the RSV season.

Materials and Methods We hypothesised that the RSV hospitalisation rate and length of hospital stay (LOS) within the 1 st year of life between preterm babies with CLD immunised according to the JCVI criteria (CLDJCVI) and the additional babies who are considered eligible by the AAP criteria would be comparable. Our cohort included babies born in Nottingham UK between 2009 and 2015. Data was collected from hospital records and the Nottingham CLD database, and analysed using Fisher's exact test for proportions and Mann-Whitney test for continuous data.

Results In total there were 3478 babies born preterm (<37 weeks GA) in Nottingham UK from 2009 to 2015. 459 babies were born in Nottingham at <29 weeks GA. 245 babies had CLD at 36 weeks corrected GA and 135 of these babies were eligible for Palivizumab (JCVI).

Abstract P81 Table 1 The number of babies hospitalised and the average LOS

Number of babies	Babies immunised according to JCVI criteria	Additional babies who would be eligible by AAP criteria	p Value
Total	135	160	
Confirmed RSV hospitalisations following discharge from neonatal unit within 1 st year of life	13 (9.6%)	13 (8.13%)	0.68
Average LOS in days (IQR)	10.3 days	6.92 days	0.5

Conclusion The RSV hospitalisation rate and LOS were not statistically different in babies under JCVI criteria and additional babies qualifying by AAP criteria. A larger multi-centre prospective study is required to prove health and economic benefits of adopting AAP Palivizumab recommendations.

P82 COMPARISON OF RSV HOSPITALISATION IN PRETERM INFANTS WITH CHRONIC LUNG DISEASE WHO DO NOT QUALIFY FOR PALIVIZUMAB PROPHYLAXIS WITH THOSE WHO QUALIFY IN NOTTINGHAM, UK

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Introduction Palivizumab prophylaxis reduces the likelihood of serious respiratory tract infection by Respiratory Syncytial Virus (RSV) in ex-preterm infants with Chronic Lung Disease (CLD). The Nottingham CLD service follows the Joint Committee on Vaccination and Immunisation (JCVI) guidelines for Palivizumab prophylaxis based on gestation, respiratory status and chronological age at the beginning of RSV season. This retrospective observational study was conducted to compare the RSV hospitalisations in preterm infants with CLD who are offered Palvizumab to those with milder CLD.

Materials and Methods We hypothesised that the RSV hospitalisation rate and length of hospital stay (LOS) within the 1 st year of life between preterm babies in home oxygen with CLD immunised according to the JCVI criteria and babies with moderate CLD not discharged in home oxygen would be comparable. Our cohort included babies born in Nottingham UK between 2009 and 2015. Data was collected from hospital records and the Nottingham CLD database, and analysed using Fisher's exact test for proportions and Mann-Whitney test for continuous data.

Results In total there were 3478 babies born preterm (<37 weeks GA) in Nottingham UK from 2009 to 2015. 245 babies had CLD at 36 weeks corrected GA. 192 of these babies were discharged in Home Oxygen and 135 of these babies were eligible for Palivizumab (JCVI).

Abstract P82 Table 1 No. of babies admitted and average LOS

Number of babies	Babies immunised according to JCVI criteria	Babies with CLD not discharged in Oxygen that would be eligible	P Value
Total	135	53	
Confirmed RSV hospitalisations following discharge from neonatal unit within 1 st year of life	13 (9.6%)	3 (5.66%)	0.56
Average LOS in days (IQR)	10.3 days	7.3 days	Unable to calculate due to small numbers

Conclusion The RSV hospitalisation rate was lower in preterm infants who did not qualify for Palivizumab compared to infants who qualified according to JCVI guideline but this difference was not statistically significant. A large prospective multi-centre study is required to ascertain the clinical and economic benefits of including the wider group for Palivizumab prophylaxis.

P83 RESPIRATORY MORBIDITY AND ASSESSMENT OF RESPIRATORY RISK FACTORS IN SCHOOL AGED CHILDREN WITH SEVERE NEUROLOGICAL IMPAIRMENT

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Introduction Respiratory morbidity is well documented in children with neurological impairment. Early intervention programmes to identify children at high risk are not well established. We proactively reviewed respiratory status of children with severe neurological impairment in local special schools to identify and manage those at high risk.

Methods School nurses identified all children with severe neurological impairment (GMFCS IV and V). All had a multidisciplinary respiratory assessment at school. Data was collected on