Abstracts and Oral Presentations

12th KJP

PAEDIATRIC RESPIRATORY CONFERENCE

LONDON, UK

22-23 APRIL 2026

Contents

Case Presentations: Challenging Cases in Respiratory Medicine

The Importance of Pulmonary Surveillance in Paediatric Rheumatological Disease: A Case of Pulmonary Sarcoidosis

Matthew Ryde, Jayesh Bhatt, Kishore Warrier

Presented by: Matthew Ryde, Nottingham Children's Hospital, Nottingham, United Kingdom

We describe the case of a girl diagnosed with sarcoidosis at five years of age with an unusual presentation of parotid swelling, renal involvement and granulomatous uveitis. She responded well to pulsed IV methylprednisolone and was then maintained on methotrexate.

She presented at the age of nine with fever, lingering dry cough and a flare of uveitis. CT chest revealed multiple small lung nodules in the lower lobes, but no fibrosis. Lung function after this episode demonstrated a mildly reduced FEV1 when reviewed in the Joint Respiratory-Rheumatology clinic. She was in remission with no respiratory symptoms, but did not have any regular pulmonary surveillance. When she was 15, a mild persistent dry cough following COVID infection prompted lung function tests, which showed a severe restrictive pattern and reduced gas transfer. CT chest revealed widespread ground-glass parenchymal changes, moderate hilar and mediastinal lymphadenopathy and sub-pleural and centrilobular nodules in both lower lobes, concerning for progression of pulmonary sarcoidosis.

She was started on monthly pulses of IV methylprednisolone for six months and also commenced on adalimumab. On follow-up, her spirometry and gas transfer parameters had improved. A repeat CT chest performed at 16 years showed that the lung parenchymal features of sarcoidosis including nodules and lymph node enlargement had resolved. She has now been transitioned to the care of our Adult Respiratory and Rheumatology colleagues.

Metastatic Endobronchial Carcinoid Tumour in a Child: A Case Report

Jawahir Al Amri, Louisa Owens

Presented by: Jawahir Al Amri, Royal College of Physicians of Ireland, Dublin, Ireland

Introduction

Paediatric bronchial carcinoid tumours are rare, slow-growing neuroendocrine neoplasms that frequently mimic common respiratory conditions, leading to a delayed diagnosis. Surgical resection is usually curative in non-metastasised disease. Metastatic disease at presentation is exceptionally uncommon in children and carries a poor prognosis. We present a case highlighting prolonged diagnostic uncertainty and the importance of following up persistently abnormal imaging.

Case Presentation

A 15-year-old boy presented with a five-year history of recurrent respiratory symptoms beginning after a right middle-lobe pneumonia at age nine. Symptoms included wheeze, cough and exercise-induced dyspnoea partially responsive to inhaled bronchodilators, recurrent respiratory tract infections and intermittent choking episodes with solid foods. At age fourteen, he had a second right sided pneumonia with ongoing radiographic changes but unfortunately was lost to follow up.

On representation at age 15, pulmonary function testing demonstrated a mild obstructive pattern with a non-significant bronchodilator response, and an elevated FeNO (75–92 ppb). Chest radiography showed persistent right retrocardiac opacity. CT thorax revealed a 5-cm enhancing endobronchial lesion in the right lower lobe with calcification, perihilar adenopathy, wide spread sclerotic bone lesions.

Flexible bronchoscopy identified a highly vascular, friable polypoid mass completely occluding the right bronchus intermedius. Biopsy confirmed a typical carcinoid tumour (Ki-67: 2.5%). Gallium DOTA-TOC PET/CT demonstrated metastatic involvement of the axial skeleton, pancreas, and liver

Management and Outcome

In Order to relieve his symptoms, he underwent right middle and lower lung lobectomy. Histopathology confirmed a typical carcinoid tumour with lymphovascular, perineural and neural invasion; two lymph nodes were positive for metastasis. Due to low mitotic activity, the metastatic disease was not amenable to chemotherapy or radiotherapy. Post Operatively the patient will remain under long-term surveillance, with a guarded prognosis.

Conclusion

This case highlights the need to consider carcinoid tumours in children with persistent or atypical respiratory symptoms and to ensure follow up of abnormal chest imaging. Although typically indolent, bronchial carcinoid tumours can rarely metastasise with devastating consequences.

The growing bronchogenic cyst; a 15 year-old from Afghanistan with an asymptomatic lung cyst.

Eleanor Wells, Atul Gupta, Katherine Harman

Presented by: Eleanor Wells, King's College Hospital, London, United Kingdom

A 15 year old girl (AA) presented to the local paediatric clinic with a cystic changes in the right mid zone on a chest X-ray. She had moved to the UK from Afghanistan and had imaging taken as part of TB screening. At the time of presentation, she was asymptomatic, physical examination was normal and laboratory tests were normal, including a negative QuantiFERON and Mantoux test. A CT Thorax showed a fluid filled mass in the right middle lobe which was bowing the oblique fissure posteriorly and was reported as a bronchogenic cyst. In the following year AA was reviewed and remained asymptomatic however there was an increase in size of the mass on chest radiographs and she was referred to respiratory clinic.

Further investigations included an ultrasound of lung and abdomen which demonstrated a thin-walled hypoechoic lesion with internal echogenic content that extends to the right lateral pleural margin. There was a large simple cyst in the right lobe of the liver measuring 8 x 7cm with intervening liver tissue which is then closely related to a further liver cyst (4 x 3cm). Repeat bloods revealed negative T-spot, normal immune investigations, high IgE 871 kU/L and Echinococcus serology was positive. A diagnosis of echinococcosis infection with lung and liver involvement was made.

Following discussion in the Echinococcosis multidisciplinary meeting AA was commenced on praziquantel for 2 weeks prior to surgical removal of the pulmonary cyst. This was to prevent dissemination if cyst leaked intraoperatively. The cystic lesion was successfully removed intact with uneventful recovery. She continued praziquantel for 4 weeks and was commenced on albendazole to complete a year course. AA was transferred 1 week later to UCLH for hepatic cyst puncture and instillation with hypertonic saline. She is being monitored for with a planned chest radiograph at 6 months and MRI Chest and Abdomen at 1 year.

Case Presentations: Challenging Cases in Cystic Fibrosis

Asymptomatic drug-induced liver injury (DILI) in a child with cystic fibrosis on long-term Elexacaftor/Tezacaftor/Ivacaftor (ETI) Therapy: A Case for Re-evaluating LFT Monitoring Guidelines?

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Presented by: James Poole-Cowley, Department of Paediatric Respiratory and Sleep Medicine, Royal Hospital for Children and Young People, Edinburgh, United Kingdom

Introduction

Highly-effective Cystic Fibrosis Transmembrane Conductance Regulator (CFTR) modulator therapies, such as the combination of elexacaftor/tezacaftor/ivacaftor (ETI), have revolutionized the management of cystic fibrosis (CF). Hepatotoxicity is a recognised side effect of ETI therapy, regular liver function testing (LFT) is recommended. Guidelines recommend 3-monthly LFT testing, reducing to annually after 12 months1. We present a case of significant, asymptomatic liver injury in a paediatric patient who had been stable on CFTR modulators for 5 years.

Case

An 11-year old girl with CF (F508del/F508del) was switched to ETI therapy, having been taking Lumacaftor/Ivacaftor and Tezacaftor/Ivacaftor, without issue, for 18 and 11 months respectively. Treatment was tolerated, with regular LFT monitoring within acceptable limits (<3 x upper limit of normal, ULN) for the next 31 months. Table 1 demonstrates a selection of transaminase measures over the preceding 5 years. Bloods checked opportunistically during a clinic, only 4 months after the most recent normal values, at a time when the patient was well, with no clinical signs of liver disease, showed: alanine aminotransferase (ALT) 653 U/L (0-50), aspartate aminotransferase (AST) 814 U/L (10-50) gamma-gulatamyl transferase (GGT) 213 U/L (5-40). Markers of liver function, including bilirubin, Albumin and INR, were normal. An extensive workup for paediatric liver injury was negative. The elevated LFTs were attributed to ETI, necessitating cessation of therapy and rapid normalization of liver enzymes. Re-introduction at a lower dose, twice weekly, resulted in a rapid rise in AST and ALT to >10xULN.

Discussion

Significant drug-induced liver injury (DILI) from CFTR modulators may occur after a prolonged period of apparent tolerance of ETI2. In our case this discovery was opportunistic, allowing detection prior to symptomatic liver disease. The asymptomatic nature of the presentation underscores the limitations of relying on clinical symptoms to trigger an evaluation of liver function.

Conclusion

The development of delayed, asymptomatic hepatotoxicity in patients established on long-term CFTR modulator therapy suggests that current monitoring guidelines may not be sufficient to ensure patient safety. Further research is required to define those that are high-risk of developing liver injury, to help guide monitoring intervals.

When the Miracle Drug Disrupts Sleep: Behavioural Changes in a Young Child on Kaftrio

Kelly Knox, Arshid Murad, Ahmed Hegab

Presented by: Arshid Murad, James cook university hospital, Middlesbrough, United Kingdom

We present a 3-year-old girl with cystic fibrosis, homozygous for the F508del CFTR mutation, who commenced elexacaftor/tezacaftor/ivacaftor (ETI) at 2 years of age. Prior to treatment, she had stable physical health, appropriate growth, age-expected neurodevelopment, and a regular sleep pattern. Baseline assessment, including the Paediatric Pre-School Symptom Checker (PPSSC), was within the non-clinical range.

Within weeks of ETI initiation, her parents reported marked behavioural changes, including irritability, emotional lability, hyperactivity, and difficulty settling. These concerns were supported by a clinically elevated PPSSC score (Figure 1). Sleep disturbance developed concurrently, with frequent nocturnal awakenings and reduced total sleep duration. There were no intercurrent illnesses, medication changes, or psychosocial stressors, and behavioural interventions were ineffective.

Following multidisciplinary review, ETI was discontinued. Behaviour and sleep gradually normalised within two weeks, with PPSSC scores returning to non-clinical range. A cautious re-challenge at a reduced dose led to rapid recurrence of identical disturbances, prompting permanent cessation of therapy at age 3. The temporal relationship, resolution on withdrawal, and recurrence on re-challenge support a probable ETI-related neurobehavioral adverse effect. The severity and persistence of symptoms caused substantial disruption to family life. Furthermore, complex decision-making around stopping potentially life-changing treatment causes psychological stress for the parents, necessitating intensive support from the cystic fibrosis multidisciplinary team, including specialist psychological input.

Severe ABPA and NTM in a child with CF : A Challenging but Rewarding Management Journey

Ankur Sharma, Wanda Kozlowska, Donna McShane

Presented by: Ankur Sharma, Addenbrookes Hospital, Cambridge, United Kingdom

We describe the case of a 6yo child with Cystic Fibrosis(genotype c.1705T>G / c.1705T>G) who has struggled with ABPA and recently, NTM, necessitating intensive management protocols for both these issues. In view of her genotype, she has not been historically eligible for CF modulators. She has bronchiectasis in all lung lobes with very poor lung function.

ABPA

She was first diagnosed with ABPA at 2 years of age. She was initially treated with antifungals and prednisolone. Her levels for Aspergillus fumigatus IgE(26.40Kua/l), IgG(>200mg/l) and total serum IgE(>5000ku/l) initially responded to inhaled steroids and antifungal treatment, though regular oral steroids were warranted in 2023. This likely caused adrenal suppression which needed switching to hydrocortisone maintenance therapy. She also showed eosinophilia with variable response to ABPA management. Azole antifungals were briefly changed to nebulised amphotericin, in response to starting of rifampicin, as detailed below.

In 2025, she was considered for biologic therapy. ‘Chairman’s action’ was sought for permission to use Mepolizumab off-label for her age (<6yo) and this was commenced in May 2025, resulting in impressive improvement in ABPA markers.

NTM

Mycobacterium intracellulare was first isolated in sputum culture in December 2024. She was recommended treatment with rifampicin, ethambutol and daily azithromycin, in line with national guidelines.

In April 2025, BAL sample was taken at the time of general anaesthesia for central access insertion which identified Mycobacterium abscessus via WGS. She was discussed at the NTM MDT and was advised intensive phase treatment for MAB with IV Meropenem, Amikacin and Ceftazidime+avibactam, based on sensitivity profile; followed by continuation phase treatment for at

least 12 months. She has had x2 hospital admissions for IV antibiotics, and has started to show improvements in her overall and chest health.

Use of CF Modulators

As of December 2025, she has been accepted to be commenced of ETI on compassionate grounds. It is hoped that this will change the trajectory of her illness.

Conclusion

Intensive management regimens, such as the use of Mepolizumab and intensive IV regimens, may become necessary to manage severe CF complications such as ABPA and NTM.

Oral Presentations

International Delphi consensus recommendations for the follow-up of children exposed to CFTR modulators in utero and through breastfeeding

Idan Bokobza, Amy Downes, Imogen Felton, Louise Thomson, Sian Bentley, Claire Hogg, Jane Davies

Presented by: Idan Bokobza, Imperial College London, National Heart and Lung Institute, London, United Kingdom

Background

Pregnancies among women with CF (wwCF) have increased in the CFTR modulator (CFTRm) era. However, pregnant wwCF were excluded from CFTRm clinical trials, resulting in limited evidence on the effects of in utero and breastmilk exposure on their offspring. Consequently, follow-up of these children varies, and no widely accepted recommendations exist. We sought expert consensus, using a Delphi process, to develop the first international guidance for follow-up of children exposed to CFTRm in utero and/or via breastfeeding.

Methods

An international survey of follow-up practices and a literature review were used to generate items for a Delphi survey. Five stakeholder groups were invited as panellists: four clinician groups self-identifying as experts (paediatric and adult CF physicians, non-CF physicians, and other health professionals) and people with CF (pwCF). An a priori consensus threshold was defined as ≥70% agreement overall and ≥50% within each stakeholder group, across a maximum of three rounds. Methodological details are available in the prospectively registered protocol (DOI: 10.17605/OSF.IO/VJ2Z8). Ethics approval was granted by the Imperial College Research Ethics Committee (ICREC 7794690).

Results

The numbers of panellists submitting completed responses in rounds 1, 2 and 3 were 106, 101 and 107, respectively, representing 26 countries. The median clinical experience among clinician panellists was 18 years (IQR 10–25). Eight pwCF participated. Consensus was reached on 73 items, covering areas including follow-up setting and frequency, liver function monitoring, cataract

screening, and management of potential false-negative CF newborn screening. In total, 941 open-text comments were received and used to refine existing items and generate new items between rounds.

Conclusion

International consensus recommendations for follow-up of children exposed to CFTRm in utero and/or via breastfeeding were developed through a Delphi process, informed by a practice survey and literature review, with input from >100 panellists including clinicians and pwCF.

Are children admitted with near-fatal asthma receiving the core elements of care at discharge? Results from NRAP, the National Respiratory Audit Programme.

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Presented by: Aleksandra Gawlik-Lipinski, University of Leicester, Leicester, United Kingdom

Background: NRAP collects data on acute asthma admissions from hospitals in England and Wales. This allows for monitoring quality of care, outcomes for children and young people (CYP) with asthma, and identifying areas for improvement. Multiple metrics are measured, including whether the Personalised Asthma Action Plan (PAAP) was reviewed or issued, the inhaler technique was checked, and the patient was referred for a follow-up with an asthma-trained clinician. These key performance indicators are aligned with the recommendations of the National Bundle of Care for CYP with Asthma.

Aim: To establish whether children with life-threatening asthma attacks receive the nationally recommended core elements of care at discharge.

Methods: We analysed the care delivered to children in 2023-2024, in NRAP audit participating hospitals, who: 1) were admitted to Intensive Care Unit (ICU) or High-Dependency Unit (HDU), or 2) received intravenous (IV) treatment for acute asthma. We audited the core elements of discharge: 1) receiving a PAAP, 2) having the inhaler technique checked, and 3) being referred for a 2-day or 4-week follow-up at discharge.

Results: In 2023-24 a total of 14,311 CYP were admitted with asthma, 2,871(20% of all admissions) were given IV-medication, of which 1,218(42%) were then admitted to ICU, HDU, or both. 54% of the CYP with asthma who were on IV-treatment received PAAP, 69% had their inhaler technique checked, and 59% were referred for a 2-day or 4-week follow-up at discharge. In the cohort of 1,404(10% of all admissions) CYP admitted to ICU or HDU, 57% received PAAP on discharge, 71% had their inhaler technique checked, and 54% were reported to have been referred for either a 2-day or 4-week follow-up appointment.

Conclusions: NRAP data show that in the group of the sickest children, admitted with near-fatal asthma, the standards of care delivered are suboptimal. Targeted quality improvement programs should be implemented

at the Trust level to improve the care for CYP and reduce the risks of future asthma attacks.

Lower airway immunophenotyping reveals distinct clusters of severe preschool wheeze described by neutrophil phenotype

Katie Bonner, Sara Fontanella, Mindy Gore, James Cook, Ashley Hoffland, Elizabeth Scotney, Kunyuan Tian, Andrew Bush, Adnan Custovic, Clare Lloyd, Sejal Saglani

Presented by: Katie Bonner, National Heart and Lung Institute, Imperial College London, London, United Kingdom

Introduction and Objectives: Recurrent severe wheeze (RSW) episodes in children under 5 years account for three-quarters of all childhood hospitalisations for wheeze/asthma, and are associated with loss of lung function by school-age, which tracks into adulthood. Some have aeroallergen sensitisation and/or eosinophilia and respond to maintenance inhaled corticosteroids (ICS), but over half have poor response to ICS and little is known about their lower airway infection and inflammation phenotype. Four previous studies examined lower airway infection and inflammation simultaneously in children with RSW, and all identified clusters with neutrophilic inflammation on bronchoalveolar lavage (BAL) cytology, and suggested infection and/or neutrophilia may be treatable traits. However, none characterised lower airway neutrophil phenotype or function. We sought to relate lower airway immune cell composition, including neutrophil subtype and function, to infection, allergic sensitisation and prescribed treatments.

Methods: Children with RSW aged 1–5 years underwent clinical phenotyping, bronchoscopy, multi-parameter flow cytometry of blood and BAL to characterise leukocytes, and assessments of lower airway bacterial and viral infection. An unsupervised analysis was undertaken to uncover clusters of airway inflammation.

Results: Of 106 children, median age 36.5 months, 32% had allergic sensitisation. Lower airway immune cells were similar in type and abundance in sensitised and non-sensitised children. However, significantly more non-sensitised wheezers had positive BAL bacterial culture. Bacterial infection was associated with activated neutrophils (low CD62L and CXCR2 expression). Children without airway bacterial infection also had up to 50% neutrophils, but with high CD62L and CXCR2 expression. The data-driven analysis revealed 3 clusters: Cluster 1, airway infection predominant with CD62Llo neutrophils;

Cluster 2, eosinophil/lymphocyte rich with CD62Lhi neutrophils; Cluster 3, low infection rate with CD62Lhi neutrophils. The clusters were independent of clinical features, prescribed ICS, antibiotics and aeroallergen sensitisation.

Conclusions: Using detailed lower airway immune characterisation with unsupervised cluster analyses for the first time in this RSW group, we reveal clusters with distinct lower airway neutrophil subtypes, differentiated by neutrophil CD62L expression and presence/absence of airway infection. Further studies are needed to determine the clinical significance of these clusters, and whether they predict response to treatment in intervention trials.

Inhomogeneity of ventilation in paediatric bronchiectasis as measured by MBW; a cohort study

Samantha Irving, Mary Abkir, Rebecca Hares, Christopher Short, Hope Zeid, Jody Forster, Kenneth Macleod, Stefan Unger, Siobhan Carr

Presented by: Samantha Irving, Guy's and St Thomas' NHS Foundation Trust, London, United Kingdom

Introduction and objectives

Bronchiectasis unrelated to cystic fibrosis (CF) is a rare condition in children and young people resulting from primary ciliary dyskinesia (PCD) or other aetiologies. The lung clearance index (LCI) derived from the multiple breath washout (MBW) calculates ventilation inhomogeneity and is a sensitive marker of small airway disease in CF and is often abnormal in the presence of normal spirometry. Little is known of its potential utility in children and young people with bronchiectasis. We hypothesised that LCI is also feasible in paediatric bronchiectasis and is more sensitive to lung disease than spirometry alone.

Method

In this dual centre cohort study, we conducted MBW and spirometry in children and young people with CT confirmed bronchiectasis unrelated to CF. MBW was carried out using the Exhalyzer D (Ecomedics, Switzerland) using software version 3.3. Spirometry was completed to ATS/ERS standards. In addition to lung clearance index, for a subgroup of patients the newly developed LCISHX (LCI with Short extension) was also calculated, which estimates underventilated lung units (UVLU) that are not normally included in a standard LCI protocol.

Results

52 children and young people with CT bronchiectasis were recruited in our centres in London and Edinburgh (23 males; mean age 12.4 years (range 4.1-18.3)). LCI was feasible in 98% (51/52) patients, and abnormal in 72% (37/52) (median LCI 8.2, range 5.7-13.1), forced expiratory volume in one second (FEV1) percent predicted was feasible in 94% (49/52) patients, and abnormal in 61% (30/52) (61%, median FEV1 78% predicted, range 50%-106%).

21 patients had UVLU measured. There was evidence of UVLU in 91% (19/21) patients, with LCISHX median 10.19 (range 6.7-22.34).

Conclusions

LCI and LCISHX is feasible in children and young people with non-CF bronchiectasis and shows additional information not captured by spirometry alone. Very substantial ventilation inhomogeneity and UVLU were demonstrated in this group with highly abnormal results obtained for both LCI and LCISHX.

We conclude that LCI and LCISHX have the potential to be used as both a clinical and a research tool in paediatric bronchiectasis.

Ultra-short echo time MRI provides detailed cross-sectional imaging of the pre-term lung

Jonathan Smith, Porus Bustani, Robert Morton, Amy Simmons, David Hughes, Jody Bray, Anna Zalewska, Shagufta Fazal, David Capener, Jim Wild, Neil Stewart

Presented by: Jonathan Smith, University of Sheffield, Sheffield, United Kingdom

Introduction and Objectives:

We have previously demonstrated the feasibility of high quality lung imaging with ultra-short echo time (UTE) MRI in term infants <4 months of age, and its utility as a non-invasive alternative to CT(1). In this follow up cohort study, our objectives are to:

1. Visualise the anatomical changes of the pre-term lung (both with and without bronchopulmonary dysplasia (BPD)) and categorise them according to severity using the modified Ochiai scoring system(2).

2. Develop cardiac MR techniques to establish a comprehensive cardiothoracic scanning package for future clinical use.

Methods:

Pre-term neonates (born <32 weeks) were scanned from 36 weeks corrected using the previously described feed and swaddle technique(1). Cardiac images were ECG gated and lung UTE sequences were retrospectively respiratory gated. Scan time was between 30-60 minutes (UTE sequence 15 minutes). All images were scored, by a consultant paediatric radiologist with >10 years experience in lung MRI, for image quality (maximum score 15) and modified Ochiai score (maximum score 14) (2).

Results:

6 infants have been scanned thus far (mean CGA 40+0wks, mean GA 27+2wks, mean BW 933g), all participants tolerated UTE and some cardiac sequences. Participants' clinical BPD classification ranged from healthy pre-term to severe(3). Mean Ochiai score was 5.0(range 2-9) compared to 0.25(0-1) for the healthy term participants. Mean image quality scores were 13.5(10-15). Histograms of the lung UTE MRI signal intensity showed a bimodal

distribution in the pre-term cases, when compared with our previous healthy term cohort(Figure 1).

Conclusions:

UTE MRI provides high quality detailed cross sectional imaging in infants born pre-term. Cardiac MRI is feasible and well tolerated within this population, during the same scanning session, adding to the potential clinical utility of cardiothoracic MRI in pre-term infants.

All of the UTE scans were abnormal, even in those classed as none-BPD, complementing the existing limited BPD lung MRI studies, focussing on those with more severe disease(4).

Take a breath. A Challenging Case at the Interface of Respiratory Medicine and Environmental Health

Harry Apperley

Presented by: Harry Apperley, King's College London, London, United Kingdom

A 5 year old child presents with recurrent cough and episodic wheeze, prompting repeated primary and secondary care attendances. Symptoms have persisted despite guideline-based management, raising concern about modifiable environmental contributors. The child lives in a densely populated South London suburb, close to King’s College Hospital. Their electronic patient record highlights exposure to poor outdoor air quality from traffic related pollution. The social history elucidates multiple indoor risk factors, including gas cooking, damp housing, and potential exposure to particulate matter. There is no clear atopic trigger, and viral illnesses only partially explain the frequency and severity of symptoms.

A key challenge in this case is the divergent parental perspectives on management. One parent, originally from rural New Zealand, strongly advocates relocation to a lower pollution environment, citing concerns about long term respiratory health. The other parent wishes to remain in London for economic reasons and is after evidence based strategies to mitigate environmental risks while continuing urban living. This requires careful integration of respiratory medicine, environmental health evidence, and shared decision making.

This case highlights how environmental exposures, often under-recognised in routine paediatric respiratory consultations, can significantly influence disease burden. It provides a platform to discuss how clinicians can systematically identify indoor and outdoor air pollution risks using targeted history taking, available air quality data, and housing assessments. The case also explores practical, family centred interventions, including indoor air quality optimisation, behavioural and housing modifications, use of local pollution forecasting, and advocacy at community and policy levels.

By framing the discussion around best available evidence, this case aims to equip clinicians to support families facing unavoidable environmental exposures, balancing ideal recommendations with realistic, equitable solutions. It underscores the clinician’s role not only in prescribing medication,

but in empowering families to reduce environmental harm and make informed choices aligned with their values and circumstances.

Establishing a Nurse-Led Mould and Damp Referral Service

Holly Eldridge, Abigail Whitehouse

Presented by: Holly Eldridge, Paediatric Respiratory, Royal London Hospital, Barts Health NHS Trust, London, United Kingdom

Background

Mould- and damp-related respiratory problems represent a growing driver of paediatric emergency presentations, generating substantial demand for housing support letters and environmental health advice within acute services. This project aimed to integrate a nurse-led housing concern referral pathway into an established Children's Environmental Health Service, enabling timely identification and coordinated management of children exposed to poor housing conditions.

Methods

We introduced a nurse-led pathway in August 2025 to connect the existing secondary care referral route with the paediatric emergency department. We developed standardised information resources and a clear referral algorithm for use at triage. For example, children presenting with respiratory symptoms (e.g. wheeze) who are identified as living with mould or damp are flagged, prompting direct nurse review in the emergency department. The nurse provides tailored advice, signposting to support services, and, where indicated, refers into the Children's Environmental Health Clinic for comprehensive follow-up, including a home visit and multidisciplinary review.

Results

From September 2025, 17 children have been referred via the new nurse-led emergency pathway and 13 through outpatient referrals, in addition to 77 patients previously seen by our service since 2024. We have completed 36 home visits, predominantly in social housing, with visible mould and ventilation problems documented in 95% of properties. Despite the implementation of Awaab's Law in October 2025, families demonstrated limited awareness of formal procedures to report mould and damp concerns. Environmental risks extended beyond heating and damp; for example, in one 12th-floor flat, sealed windows prevented safe ventilation until urgent action was triggered through liaison with the housing provider.

Discussion

This nurse-led model demonstrates a feasible, scalable approach to addressing housing-related respiratory risk within paediatric acute care. Embedding a clear referral pathway reduces ad hoc requests and supports clinicians to address upstream determinants of health without increasing workload. Wider adoption of similar models may help standardise responses to mould and damp exposure and improve safety for children in vulnerable housing situations.

Poster Presentations – Day 1

The socioeconomic determinants of lung function in children with Cystic Fibrosis

Isabella Jordan, Molly OHalloran, Jenin Marianayagam

Presented by: Isabella Jordan, University of Manchester, Manchester, United Kingdom

Children with cystic fibrosis (CF) from socioeconomically deprived backgrounds are known to have poorer health outcomes, including reduced lung function. This service evaluation aimed to assess the relationship between socioeconomic status and lung function in children with CF at Royal Manchester Children's Hospital (RMCH), and to compare findings with national data.

A retrospective evaluation was conducted using anonymised data from 129 paediatric CF patients. Variables collected included: IMD decile (as a measure of socioeconomic status), percent predicted FEV_1, BMI z-score, sweat chloride, CF genotype, number of antibiotic courses over a period of 12 months, and whether compliance issues were reported. Data were reviewed for normality via histograms. Relationships between FEV_1 and individual variables were assessed using Pearson correlation coefficients. Scatter plots with linear trendlines were generated to visualise the relationship between IMD decile and FEV_1. P values were calculated to assess statistical significance.

A weak positive correlation was found between IMD decile and percent predicted FEV_1 ($R^2 = 0.06$), indicating that children from less deprived backgrounds had slightly better lung function. This relationship was weaker than national trends, where socioeconomic deprivation explains a larger proportion of lung function variability. Other variables, such as BMI z-score and treatment adherence, also showed associations with FEV_1.

Findings suggest that while socioeconomic disparities in lung function persist, RMCH demonstrates a flatter social gradient than national data. This may reflect effective local clinical practices that help reduce health inequality in children with CF.

Surveillance of Staphylococcus aureus isolation in a Paediatric Cystic Fibrosis Tertiary Centre: A service evaluation of cough swabs, sputum samples and treatment outcomes.

Jenin Marianayagam, Isabella Jordan, Molly O'halloran

Presented by: Jenin Marianayagam, University of Manchester, Manchester, United Kingdom

ABSTRACT

Cystic fibrosis is a genetic condition caused by a faulty protein. This affects the body by causing excess mucus in various organs, particularly the lungs. Cystic fibrosis affects over 10,000 people in the U.K. One of the most common infections in patients with cystic fibrosis is Staphylococcus aureus. Staphylococcus aureus is a gram-positive bacterium that can damage the lung epithelium, contributing to pulmonary decline in these patients. This service evaluation focuses on patients at the Royal Manchester Children's Hospital Cystic Fibrosis Centre to assess the frequency of S. aureus isolation and subsequent treatments in this patient population.

Method: An electronic database was examined to acquire data regarding the quantity of cough swabs, the number of sputum samples, the count of positive samples for S. aureus, and the frequency of antibiotic treatments in the year 2024.

Results: On average, each patient submitted 7 swabs during the year 2024. All patients included in the evaluation submitted at least one sample within the year. 40.8% of patients did not have any positive swabs for Staphylococcus aureus. Among the patients who tested positive, 43% had not received any antibiotic treatments.

Conclusion: The finding indicates robust infection surveillance and control protocols within this centre. However, some inconsistencies in antibiotic prescriptions may lead to both over-treatment and under-treatment.

Implementing a tool to determine when antibiotics should be prescribed could help standardise treatment.

Atopy as a risk factor for paediatric acute asthma in thunderstorm conditions: a retrospective case-control study.

Suraya Foster, Nora Antova, Adam Usher

Presented by: Suraya Foster, Gloucestershire Hospitals NHS Foundation Trust, Gloucester, United Kingdom

Title: Atopy as a risk factor for paediatric acute asthma in thunderstorm conditions: a retrospective case-control study.

Authors: Suraya Foster (Gloucestershire Hospitals NHS Foundation Trust, Gloucester, UK), Nora Antova (Università di Bologna, Bologna, Italy), Adam Usher (Gloucestershire Hospitals NHS Foundation Trust, Gloucester, UK).

Introduction and Objectives: ‘Thunderstorm asthma’ refers to an acute asthma exacerbation triggered by thunderstorm weather conditions. Pollen is broken up into smaller particles, concentrated by wind gusts, and lodges deep in the airways, triggering bronchospasm. Thunderstorm conditions are known to cause higher numbers of paediatric acute asthma presentations; this study aimed to identify which paediatric patient cohorts were most at risk.

Methods: This retrospective case-control study compared paediatric asthma presentations at a district general hospital during a period of heavy thunderstorms in June 2023 with a control group in June 2024. Inclusion criteria were age <18 years, presenting complaint or discharge diagnosis of asthma or viral-induced wheeze, during the period of heavy thunderstorms in June 2023 (or equivalent control period).

Results: As expected, 3.5 times more patients presented with an exacerbation of asthma during the period of thunderstorms. Moreover, 47% of thunderstorm cohort did not have an existing asthma diagnosis at presentation, compared to 18% of the control cohort. Finally, 63% of the thunderstorm cohort had a documented history of atopy (hay fever and/or eczema), as opposed to 18% of the control cohort.

Conclusions: Thunderstorms in June 2023 caused a steep rise in asthma presentations. These weather conditions seemed to ‘unmask’ previously undiagnosed patients, and patients with a heavy atopic burden may be more at risk. With the frequency and severity of thunderstorms set to increase due to climate change, our treatment algorithms for asthma may need to be interrogated to protect those most at risk.

Bridge Over Troubled Airways: A Rare Case of Bridging Bronchus

Michael Lavery, Jonathan Twynam-Perkins

Presented by: Michael Lavery, Royal Hospital for Children, Glasgow, United Kingdom

A 5-month-old presented with persistent noisy breathing and moderate tachypnoea/accessory muscle use since birth. His neonatal course was unremarkable (Born at 36w by LUSCS for reduced foetal growth, weighing 2kg). Chest X-ray during admission and 1 week following recovery showed persistent translucency and hyperexpansion of the left lung. He had input from Respiratory, ENT and Radiology who recommended bronchoscopy, MLB (microlaryngobronchoscopy), & CT chest with contrast for vascular ring vs. foreign body vs. bronchial anomaly.

He received several antibiotic courses for wet cough/LRTI and received SLT input for coughing during feeds while awaiting further investigation. An overnight oximetry was normal.

His CT demonstrated aberrant bronchial anatomy and an anomalous bronchus supplying the right middle and lower lobe originating from the left main bronchus. This configuration is typical for a bridging bronchus. No vascular anomalies were demonstrated. The carina and proximal airways supplying were diffusely small in calibre, predominantly on the left, with consequent hyperinflation probably secondary to a “ball valve” effect.

These findings were confirmed on MLB which suggested the presence of one complete tracheal ring in addition to laryngomalacia.

This rare anomaly can be associated with other consequential anomalies1, (tracheal stenosis, vascular anomalies etc.) and where found children need careful bronchoscopic, cardiac and radiological assessment. In this case a conservative approach has been adopted, surgery if required is complex.

This case demonstrates a rare but important cause of persistent increased work of breathing and the importance of identifying and the inter-disciplinary investigation of children presenting with persistent hyperinflation on CXR.

This case will be presented along with a high quality CT image of the bridging bronchus

A review of outcome and associated factors for respiratory syncytial virus lower respiratory tract infection in a public tertiary paediatric unit in Hong Kong

Sze Hang Fung, Kin Lok Wong

Presented by: Sze Hang Fung, Queen Elizabeth Hospital, Hong Kong, Hong Kong

Background: Respiratory syncytial virus (RSV) infection is a major cause of lower respiratory tract infection (LRTI) in paediatric population. Understanding the risk factor of severe RSV infection is important to guide the priority of RSV prophylaxis due to its scarce availability.

Objective: The study aimed to review the demographics and the outcome predictors in paediatric admissions for RSV LRTI in patients aged under 2 years old.

Methods: A single-centre retrospective study was conducted at Queen Elizabeth Hospital in Hong Kong. Patients aged under 2 years old, born at gestational age greater than or equal to 29 weeks, being admitted from January 1, 2020 to December 31, 2023 with diagnosis of RSV infection were included. They were classified into term and preterm infant groups. The proportion of lower respiratory tract infection and disease severity were compared. Risk factors for lower respiratory tract infection and pulmonary outcome were investigated.

Results: Around half of all subjects were suffering from LRTI secondary to RSV infection. No significant differences in the proportion of LRTI and disease severity were noted between the preterm and term group. Higher respiratory rate (OR 1.10, p value <0.001) and higher C-reactive protein level (OR 1.02, p value 0.04) on admission were associated with higher risk of LRTI, while the presence of fever on initial presentation (OR 2.97, p value 0.007) and the need of oxygen at Emergency Department (OR 13.4, p value 0.002) were associated with higher risk of requiring ventilatory support during hospitalisation.

Conclusions: The high incidence of LRTI reflected the heavy disease burden of RSV infection in paediatric population. The disease outcomes of both preterm and term infants did not show significant difference. Future prospective multicenter study can be beneficial to identify risk factors for

stratification of priority in receiving RSV prophylaxis, which is scarce and expensive.

Naturally occurring resistance-associated substitutions (RAS): To what extent do they impact treatment interventions for RSV?

Kirthana Balachandran

Presented by: Kirthana Balachandran, University of Nottingham, Nottingham, United Kingdom

Background:

Respiratory syncytial virus (RSV) is a leading cause of respiratory infections (LRTI), disproportionately affecting vulnerable populations such infants, older adults, and immunocompromised individuals. The virus's high mutation rate and lack of proofreading mechanisms contribute to the emergence of resistance-associated substitutions (RAS), reducing the effectiveness of antiviral drugs, monoclonal antibodies and vaccines.

Aims:

This extended literature review aims to:

* examine approved treatments in the UK and those under development, including their mechanism of action.

* identify drugs or drug classes which directly target specific components of the virus.

* analyse the specific regions of the virus protein or genome targeted by these drugs.

* investigate whether specific amino acid substitutions associated with resistance (RAS) affect the efficacy of these treatments and contribute to treatment failure.

Principal Findings:

RSV’s rapid evolution drives mutations in key proteins, such as the F and G proteins, diminishing the effectiveness of existing treatments. Substitutions like K272 and N276 in the F protein reduce the efficacy of monoclonal antibodies, such as palivizumab. RAS also compromise antiviral drugs and emerging therapies, including fusion inhibitors and next-generation monoclonal antibodies. For example, resistance to fusion inhibitors has been observed, and mutations in the viral genome can also lead to cross-resistance, diminishing multiple drug options. Immunocompromised individuals face an increased risk of RAS due to prolonged treatment exposure. Resistant strains exhibit enhanced viral fitness and virulence, contributing to increased disease severity and treatment failure, particularly in high-risk groups.

Conclusion:

This review concludes that resistance-associated substitutions significantly impact the effectiveness of current treatments, including antiviral drugs and monoclonal antibodies. This highlights the need for ongoing, enhanced global surveillance, the development of next-generation therapies targeting conserved viral regions, and the use of combined treatments to mitigate resistance. Addressing RAS will be crucial for improving long-term treatment success and managing the evolving threat of RSV.

3D Facial Scanning Fidelity Under Motion and Skin Tone Variation: A Rapid Review of Current Evidence

Jagjot Rakkar, Tariq Issa, Abdullahi Mohamed, Ritika Patel, Joanna MacLean

Presented by: Jagjot Rakkar, University of Alberta, Edmonton, Canada

Background: Three-dimensional (3D) facial scanning is increasingly adopted in paediatric respiratory care to support objective assessment of craniofacial morphology and to enable digital workflows for custom non-invasive ventilation (NIV) mask fabrication. These systems promise improved mask fit, reduced pressure-related injury, and enhanced tolerance for children with sleep-disordered breathing and craniofacial anomalies. However, two underexamined factors: skin tone variability and motion artefacts, especially common in paediatric populations may degrade scan fidelity and risk inequitable device performance.

Objectives: To synthesize current evidence on how skin tone and motion influence scan accuracy, reliability, and bias in three-dimensional facial scanning technologies relevant to paediatric respiratory care.

Methods: A rapid review was conducted following PRISMA 2020 guidelines. Eight databases (MEDLINE, Embase, CINAHL, Scopus, Web of Science, Compendex, IEEE Xplore, Academic Search Complete) were searched from 2020-April 2025. Eligible studies evaluated 3D facial scanner accuracy and the impact of skin tone or motion artefacts. Two reviewers independently screened titles/abstracts and full texts; data extraction was completed in triplicate.

Results: Of 2208 records, 1550 unique studies were screened and seven met inclusion criteria, spanning structured-light scanners, infrared systems, wearable multi-camera arrays, point-cloud AI models, and smartphone-based LiDAR. Three studies demonstrated tone-linked effects: blue structured-light scanners failed on dark-tone mannequins, whereas infrared systems retained reduced but recoverable accuracy improved with fiducial markers. A human study showed brightness-dependent deviations influenced by skin color. Motion was rarely quantified: two wearable or fixed-reference systems mitigated head movement, and one AI-based approach suppressed artefacts via preprocessing. Smartphone LiDAR outperformed one dedicated scanner under static conditions but was more susceptible to motion. One multimodal AI

face anti-spoofing study reported ethnicity-linked classification error rates of 11.4–19.6%.

Conclusions: Current evidence highlights clear gaps in evaluating skin tone and motion in 3D facial scanning, factors directly relevant to custom paediatric NIV masks. Scanner wavelength, illumination, and stabilization strategy substantially influence accuracy across populations. To support equitable paediatric respiratory care, future research should systematically test scanners across representative skin tones, and quantify real-world motion

Treatment Strategies for Managing Pelvic Floor Dysfunction in Individuals with Chronic Respiratory Conditions: A Scoping Review

Adele Russell, Zoe Johnstone

Presented by: Adele Russell, Queen Margaret University, Edinburgh, United Kingdom

Introduction: Pelvic floor dysfunction (PFD), encompassing urinary incontinence (UI), faecal incontinence, pelvic organ prolapse, sexual dysfunction and pelvic-perineal pain, is a significant health concern with physical, psychological and social consequences (Hay-Smith et al., 2024; Peinado-Molina et al., 2023). Chronic respiratory conditions, such as chronic obstructive pulmonary disease and cystic fibrosis, increase the risk of PFD due to persistent coughing and altered breathing patterns that strain pelvic floor muscles (Battaglia et al., 2019; Chambers et al., 2017). Despite robust evidence supporting pelvic floor muscle training in the general population (Hay-Smith et al., 2024), its effectiveness and other treatment strategies in individuals with chronic respiratory conditions remain underexplored.

Method: This scoping review aimed to map and critically appraise interventions for PFD in this population. A comprehensive search of CINAHL, PubMed, Cochrane Library, MedLine, and grey literature was conducted up to April 2025, including studies of any design addressing PFD management in adults with chronic respiratory disease. Data extraction followed PRISMA-ScR guidelines, and findings were synthesised narratively.

Results: Ten studies met inclusion criteria, including randomised controlled trials, observational studies, case series and literature reviews. UI, particularly stress incontinence, was the most frequently investigated dysfunction. PFMT consistently demonstrated improvements in symptoms, muscle endurance and pelvic floor contraction, although small sample sizes, heterogeneity, and methodological limitations (e.g., lack of blinding, reliance on self-report) reduced generalisability. Other interventions included tension-free vaginal tape, duloxetine and Chinese herbal medicine, with mixed or limited evidence. Key barriers to treatment adherence included embarrassment, recruitment difficulties, physical limitations and inadequate integration of continence care into respiratory services.

Discussion: The evidence highlights potential benefits of PFMT but underscores substantial research gaps, including limited studies in men, short-

term follow-up, and insufficient investigation of non-urinary aspects of PFD. Future research should focus on long-term trials and integrated interdisciplinary approaches to optimise management of PFD in individuals with chronic respiratory conditions.

A review of lung function testing after surgical and conservative management of children with congenital lung lesions in a single tertiary centre

Michael Clachers, Paul Burns, Jonathan Coutts

Presented by: Michael Clachers, NHS Greater Glasgow and Clyde, Glasgow, United Kingdom

Background

Following the introduction of Fetal Anomaly Scanning at 20/22 weeks gestation the diagnosis of congenital lung lesions (CLM) has become more common. There is currently no international consensus on the management of these rare congenital lesions, with limited data on long term outcomes. Proponents for elective lobectomy in all affected infants suggest that compensatory lung growth will occur following surgery. We have a dedicated long term CLM clinic and report the results of lung function testing.

Methods

A retrospective analysis of spirometry results from patients diagnosed with CLM born between August 2005 and December 2017. Independent sample T test was used to compare the FEV1 and FVC z-Scores between patients managed surgically and conservatively.

Results

36 patients were identified; 21 managed surgically, and 15 managed conservatively. Age at lung function testing was similar (mean 9 years). There was no significant difference in FEV1 and FVC z-Scores between the 2 groups (Table 1a). Reviewing abnormal results, 33% of the surgically managed group had reduced FEV1. Most of these patients had reduced FEV1/FVC indicating an obstructive pattern (Table 1b).

Conclusion

Our results show no significant difference in spirometry for patients with CLM, regardless of management. The dominant abnormality in surgically managed CLM is an obstructive defect. Despite removal of a portion of healthy lung in most of the operated children, their mean spirometry results are normal. This may be evidence of compensatory lung growth in operated children. A limitation of this study is our small sample size. We plan to continue to follow

up all patients attending our dedicated clinic, performing lung function testing at an appropriate age.

Methionine’s Moment: The Role of Methionine in Pulmonary Alveolar Proteinosis

Shana Irvine

Presented by: Shana Irvine, Royal Belfast Hospital for Sick Children, Belfast, United Kingdom

A 23-month-old girl presented with cough and reduced air entry bilaterally. She was treated for viral induced wheeze with nebulised bronchodilators and oral prednisolone. Chest x-ray showed bilateral ground glass changes and diffuse consolidation. She was commenced on antibiotics with atypical and pneumocystis cover added after discussion with Paediatric Respiratory Medicine.

On further investigation, CT chest showed interlobular septal thickening and a reticular pattern throughout, with air-space opacifications in the lower lobes. Differential diagnosis included an atypical infection, pulmonary alveolar proteinosis (PAP) and Langerhans' Cell Histiocytosis. Bronchoscopy demonstrated copious volumes of milky fluid. Bronchoalveolar lavage (BAL) samples were positive on PAS staining, confirming a diagnosis of PAP. Initial management was whole lung lavage (WLL). Genetic testing showed homozygous change in methionyl-tRNA synthetase 1 (MARS1) gene.

This patient was started on a trial of L-Methionine at a starting dose of 80mg/kg hoping to increase serum methionine levels to 200 µmol/l. The child has responded poorly to several WLL but has made some progress nutritionally. She requires oxygen via nasal specs at all times.

Pulmonary alveolar proteinosis is where lipoproteous material accumulates in the alveoli and cannot be re-absorbed causing poor gas exchange and hypoxia. Patients present with dyspnoea, cough, fever and fatigue. The estimated incidence of PAP is 1 in 2 million and it is more common in the 3rd to 4th decade of life, often secondary to autoantibodies to the GM-CSF Receptor protein. Diagnosis is suggested by imaging and confirmed by histology of lung tissue or BAL which is milky in nature. These samples are typically PAS-stain positive. Treatment for PAP is WLL. Lung transplant may be considered.

MARS1 gene encodes the cytosolic methionine tRNA synthetase which helps charge tRNAs with methionine, forming methionyl-tRNA. Mutations within the MARS1 gene are associated with interstitial lung and liver disease. There are

a limited number of case studies that have shown giving enteral L-methionine improved respiratory function in paediatric patients with PAP.

Childhood PAP usually responds well to WLL. Whole genome analysis is helping to further delineate subgroups within very rare lung diseases and highlights differences in prognosis and response to treatments.

Exploring health professional views of management for preschool wheeze (PSW): A qualitative study

Lubna Wajid, Sejal Saglani, Prasad Nagakumar, Gemma Heath

Presented by: Lubna Wajid, Birmingham Children's Hospital, Birmingham, United Kingdom

INTRODUCTION AND OBJECTIVE: Approximately 30-40% of children experience recurrent wheeze attacks in first 6 years of life. 75% of children admitted to hospital with wheeze are aged between 1-5 years (Davies: ADC:2008) and UK has the second highest prevalence of wheeze in the second year of life. PSW results in significant morbidity, healthcare costs, and impaired quality of life for both children and parents. The aim of this study was to explore the views of health professionals about current management approaches and acceptability of investigations to investigate PSW.

METHODS: A purposive and snowball sampling approach was used to recruit health professionals from primary and secondary care. Qualitative data was collected via semi-structured interviews, transcribed verbatim and analysed using thematic analysis, facilitated by use of NVivo.

RESULTS: Fourteen health professionals with experience in managing children with PSW participated. Analysis generated four themes: (1) Challenges in nomenclature and availability of diagnostic tests, (2) Diagnostic uncertainty, (3) Current approach to investigating children with preschool wheeze, (4) Treatment considerations. All participants agreed that PSW remains a burdensome disease without consistent diagnostic nomenclature, blood investigations or specific treatments. There were differences in views from primary and secondary care professionals. HP (health professionals) in primary care preferred simple terminology Virus Induced Wheeze whereas HP in secondary care used various terminologies depending on clinical presentation i.e MTW (multi-trigger wheeze), EVW (episodic virus wheeze). Organisational challenges to perform investigations and absence of diagnostic pathways in primary care were the key challenges in confirming asthma in young children. Addressing adherence issues to steroid inhalers was dealt better in secondary care compared to primary care.

CONCLUSION:

Our study highlights the need for uniform terminology to describe PSW across healthcare systems. Clinical pathways should be implemented to guide health

professionals about optimal management. The study highlights an unmet need for developing infrastructure in primary care to perform simple blood tests in children. Access to point of care testing or setting up diagnostic hubs may help. There is a need for training and education of health professionals in management of preschool wheeze.

Using a Combination of Oximetry Measures to Predict Obstructive Sleep Apnoea in Children with Down Syndrome

Hannah vennard, Menaga Ananthamoorthy, Elise Buchan, Thomas L Wilkinson, Rebecca Lennon, Jay James, David Young, Martin Samuels, Hazel J Evans, Ross Langley

Presented by: Hannah vennard, Department of Respiratory and Sleep Medicine, Royal Hospital for Children, Glasgow, United Kingdom

Background

Children with Down Syndrome (DS) are at risk of sleep disordered breathing (SDB). The potential of single nocturnal pulse oximetry (NPO) indices to predict obstructive sleep apnoea (OSA) in children with DS is limited. Our aim is to investigate whether a combined model using NPO indices and demographic data improves the predictive potential.

Methods

This is a retrospective study comparing simultaneous cardiorespiratory polygraphy (CR-P) and NPO data of children, 2-16 years, at two UK tertiary sleep centres (University Hospital Southampton and The Royal Hospital for Children Glasgow), May 2016 - 2024. OSA was defined as an obstructive apnoea hypopnoea index (OAHI) ≥5/hour. We randomly assigned 80% of the cohort for training and 20% for validation. Univariate and multivariate receiver operating characteristic (ROC) curve analysis was undertaken. Logistic regression models were evaluated using NPO and demographic data, for predicting OSA.

Results

We included 310 children in the training dataset, 42.3% female, median age 5.84 years, 25.5% had OSA. An area under the ROC curve (AUC) was highest using age, sex, mean SpO2, minimum SpO2, ODI3, Delta D12 index,

% time <90%, AUC 0.84 (95% CI 0.79, 0.90), p<0.0001. A model probability threshold of >0.5 had a low sensitivity, 46.8%, and very high specificity, 95.2%; moderate positive predictive value (PPV), 77.08%, and high negative predictive values (NPV), 83.97%. Lower probability threshold of >0.2247 gave the highest combined sensitivity/ specificity, (78.48%/ 76.62%) and >0.1268 gave a high sensitivity 91.14% with a low specificity of 48.48% (Figure 1). Findings were similar in the validation cohort. A model probability threshold of >0.1268 signposted 67.5% to CR-P evaluation (21 true positives, 31 false positives) and categorised 32.5% as no OSA (24 true negatives, 1 false negatives).

Conclusions

Combining NPO indices and routinely collected demographic data improves predictive potential of NPO for OSA in children with DS. Combined model probabilities can be integrated into risk score for moderate/ severe OSA with variable sensitivities and specificities and can be used to stratify OSA risk to support clinical decision making.

Evaluation of Surfactant Protein D as a biomarker for respiratory disease progression in children with bronchiolitis

Khin Su Tha, Tania Castillo Hernandez, Jens Madsen, Howard Clark, Malcom G Semple

Presented by: Khin Su Tha, UCL, London, United Kingdom

Introduction

Alveolar type II cells secrete surfactant, a lipoprotein complex including surfactant protein D. SP-D has functions in immune regulation and defence and studies have shown that SP-D has the potential to be used as a biomarker of lung disease.

Objective

To evaluate if SP-D has biomarker potential in infants with bronchiolitis, SP-D concentrations of patient bronchoalveolar lavage (BAL) samples were measured at 0 and 24 hours collected from the Bronchiolitis Endotracheal Surfactant Study (BESS) trial, which is testing the efficacy of endotracheal surfactant therapy in children with bronchiolitis.

Hypothesis: Progression of disease severity in infants with bronchiolitis will be a decrease in concentration of SP-D in BAL samples. Improvements in condition will show an increase in concentration of SP-D in BAL samples.

Methods

Enzyme linked immunosorbent assay (ELISA) was used to determine concentration of SP-D in patient samples. The Bicinchoninic acid (BCA) assay was used to quantify total protein concentration in patient samples. Samples were recruited from season 2 and 4 of the BESS trial.

Results

Two groups were identified; one group experienced an increase in SP-D concentration from timepoints 0 hours to 24 hours. The second group experienced a decrease in SP-D concentration. With regards to the ratio of SP-D concentration to total protein concentration, two groups were identified with one group experiencing an increase in the ratio of SP-D concentration to total protein concentration. The other group experienced a decrease in this ratio.

Conclusions

SP-D concentration and total protein concentration of patient samples were successfully determined in both methods. Using the total protein concentration, it was determined if quality of the BAL samples affects the reading of results. Good quality BAL samples are required to further understand if changes in SP-D concentration are due to the response of surfactant therapy or due to the quality of the samples. Future analysis with group allocations is required to evaluate the biomarker potential of SP-D.

The role of air pollution in the pathogenesis of paediatric asthma - a literature review

Alfred Ellis

Presented by: Alfred Ellis, Barts and the London School of Medicine and Dentistry, London, United Kingdom

Background: Asthma is a highly prevalent childhood disorder, with significant and inequitable impacts on morbidity and mortality. Whilst there is significant evidence associating ambient air pollution with increased frequency and severity of exacerbations, the pathways potentially underlying childhood asthma onset are less clear. Therefore, by exploring the effects of various air pollutants in relation to asthma's inflammatory cascade, air pollution's possible role in pathogenesis can be elicited.

Aims and objectives: This review will appraise the significance of genetic, epigenetic and histopathological changes secondary to air pollution exposure in different experimental models, and how these may correlate with increased incidence of childhood asthma.

Methods: A systematic literature search of two databases (PubMed and Embase) was conducted. Studies that included research focusing on key mechanisms in paediatric asthma pathogenesis were eligible for inclusion. A narrative synthesis of the results was utilised, with analysis stratified for type of air pollution to evaluate the relative strength of association between different pollutants and child asthma outcomes.

Results: 1367 results were generated for initial review, and 30 papers ultimately reached the threshold for inclusion. The most prevalent exposure encompassed in the studies was particulate matter less than 2.5 micrometres (PM2.5). Key interactions between air pollution and paediatric asthma included gene methylation causing dysregulated inflammation, microbiome disruption, and activation of cells relevant to both atopic (including eosinophils and mast cells) and non-atopic asthma (particularly neutrophils). Three signalling pathways (Notch, bitter taste transduction, and neuronal proliferation and differentiation) were isolated as relevant to paediatric asthma onset. In vivo models posited the role of pollution exposure in induction of asthmatic phenotypes through altered airway immune cell recruitment, increased mucus production and elevated pro-inflammatory cytokines.

Discussion and conclusion: Whilst there are important limitations derived from the included study designs, the review’s findings collectively aligned with a pre-existing understanding of the mechanisms driving asthma in children, highlighting strong biological plausibility. Findings from in vivo mouse models seem to indicate induction of an asthmatic phenotype was more extensive in mice co-exposed to aeroallergens and air pollution, suggesting a synergistic relationship between air pollution and other risk factors in predisposing childhood asthma onset.

Primary Care Education to Improve Management of Paediatric Asthma: A Quality Improvement Initiative in South West London

Danielle Bucke, Charlotte Doyle

Presented by: Danielle Bucke, Croydon University Hospital, London, United Kingdom

Title: Primary Care Education to Improve Management of Paediatric Asthma: A Quality Improvement Initiative in South West London.

Authors: Danielle Bucke, Charlotte Doyle, Croydon University Hospital, London, United Kingdom.

Introduction/Objectives: South West London Integrated Care System has the highest proportion of high risk paediatric asthma patients in London. Using the South West London dashboard, we aimed to identify high risk children and their primary care providers to inform targeted educational interventions. We hypothesised that structured teaching for general practice clinicians would increase confidence in recognising and managing paediatric asthma and support safer prescribing. High risk asthma was defined as ≥6 SABA and ≤3 ICS inhalers within any 12 month period.

Methods: All children aged 5–18 years with an asthma diagnosis registered with Croydon University Hospitals ICB network were reviewed using the London dashboard between 1 January 2024 and 30 June 2025. Prescribing patterns, documentation of long-term condition coding, asthma action plans and reviews were analysed. A teaching session for general practice clinicians covered risk stratification, diagnosis and management of paediatric asthma. Pre- and post-Likert-scale surveys assessed clinician confidence.

Results: Of 53 GP practices, 38 had available data. A total of 156 children met the high risk criteria, with 1197 SABA and 215 ICS inhalers prescribed; 36% had no ICS prescriptions. 54% had asthma coded as a long-term condition, 35% had an asthma action plan, and 36% had a documented asthma review. All practices with high-risk patients were invited to online teaching, 25 clinicians attended the teaching; 10 completed the pre-survey and 13 the post-survey. Confidence improved across all domains as shown in the bar chart below. We saw an increase in confidence in all domains particularly in diagnosis of paediatric asthma. Over 90% rated the teaching as fairly/very relevant to their clinical role.

Conclusions: High risk paediatric asthma prescribing remains prevalent locally, with significant gaps in preventor use and asthma documentation. A focused educational intervention improved clinician confidence across key management areas. Continued teaching and repeat audit cycles are planned to support improvement in paediatric asthma care.

Breathing Easy at Home: The Impact of Paediatric Virtual Ward on Admissions Avoidance for Children with Asthma

Chloe Baird-Rayner, Sophie Harris, Ruth Hartland, Lucy Quirk, Maria Atkinson

Presented by: Chloe Baird-Rayner, Midland Metropolitan University Hospital, Birmingham, United Kingdom

Asthma is the most common chronic condition in children (Asher et al., 2018) and remains a major contributor to paediatric emergency department (ED) attendances in the UK (Keeble and Kossarova, 2017), creating substantial strain on families and healthcare services. To help reduce hospital visits and support early intervention, our Paediatric Virtual Ward (PVW) service provides open access for children experiencing frequent asthma exacerbations or viral wheeze. Parents can contact the service directly for remote monitoring, timely advice, and safe symptom management at home. This audit evaluates the impact of PVW open access on hospital utilisation and inpatient bed-days.

Aims

1. Assess the effect of PVW open access on ED attendances and hospital admissions.

2. Identify inpatient days saved through early discharge and admission avoidance.

Methods

We conducted a retrospective audit comparing ED attendances, admissions, and length of stay over the 24 months before and after introduction of PVW open access. Data were extracted from Unity for children granted open access, including hospital use, route of Virtual Ward admission, number of Virtual Ward episodes, and days saved through early discharge or home-visit–supported admission avoidance.

Results

Seven children received PVW open access between 2023 and 2024 due to recurrent exacerbations or viral wheeze. They collectively had 75 Virtual Ward admissions during the 2-year audit period. Following open access, average hospital attendance and admission rates decreased by 49%. PVW activity resulted in 33 inpatient days saved through early discharge and a further 98 days saved through admission avoidance, totalling 131 days. Even assuming

only half of avoided admissions would have required inpatient care, more than 65 inpatient days were still saved.

Conclusions

The PVW significantly reduced ED attendances and hospital admissions for children with recurrent wheeze or asthma exacerbations, demonstrating that open access combined with remote monitoring and early intervention offers a sustainable, patient-centred model of chronic asthma management. With 26 children now on the PVW open-access caseload, these findings support ongoing expansion of the service for paediatric long-term conditions. Parent feedback highlights the reassurance and support provided by PVW, underscoring its value in empowering families to manage symptoms safely at home.

The diagnostic utility of bronchoscopy and lipid-laden macrophages in identifying aspiration in children

Kathryn Kimber, Sairah Akbar

Presented by: Kathryn Kimber, Cambridge University Hospitals NHS Foundation Trust, Cambridge, United Kingdom

Lipid-laden macrophages (LLM) in bronchoalveolar lavage (BAL) have been suggested as a biomarker for aspiration. However, due to their poor specificity, the link between high LLM and aspiration has been questioned (Lawlor et al, 2023). The lipid-laden macrophage index (LLMI) helps to quantify LLMs, but no universally accepted threshold reliably diagnoses or differentiates aspiration from other conditions (Orishchak et al, 2024). This audit examined the clinical utility of BAL cytology in diagnosing aspiration in children – specifically, whether BAL LLM reporting influenced subsequent investigation or management for aspiration.

This was a retrospective analysis of BAL samples and the subsequent management of 45 children undergoing elective bronchoscopy in a tertiary paediatric respiratory centre over 12 months. Ages ranged from 0.9-17 years (mean=5.8). The main indications for bronchoscopy were recurrent infection (51%), persistent cough (20%) and recurrent wheeze (17.7%).

LLM were reported in 41/45 BAL samples, ranging from “scanty” to “abundant”, or simply “present”. 10 samples described high LLM levels. Prior to bronchoscopy, 10 patients were already on reflux treatment. Following bronchoscopy, 13 patients had interventions for suspected aspiration: 6 started reflux medication and 7 were referred to speech and language therapy. Of note, 7/10 (70%) of those patients with high LLM presence had no further investigation or treatment for suspected aspiration.

These findings suggest that clinicians at this centre do not consistently use LLM cytology to guide decision-making or subsequent patient management. Even when high LLM levels were reported, most patients did not undergo further aspiration-focused investigation or treatment. Cytology reporting and quantification of LLM varied considerably, making interpretation difficult. LLM presence lacks the specificity to be a definitive diagnostic tool, and there is no clear definition of a clinically significant LLMI. Future work must define and standardise a clinically significant LLMI and clarify its role in clinical management.

Lawlor, C, and Sukgi SC. “Lipid-Laden Macrophage Index as a Diagnostic Tool for Pediatric Aspiration: A Systematic Review.” OTO open vol. 7,1 e33. 23 Mar.2023, doi:10.1002/oto2.33

Orishchak, Ostap, et al. "Lipid-laden macrophage index as a marker of aspiration in children, is it reliable? A scoping review." International Journal of Pediatric Otorhinolaryngology(2024):112151.

Intrapulmonary Percussive Ventilation (IPV) use in a UK community setting: Optimising airway clearance in children with Spinal Muscular Atrophy (SMA)

Ruth Wakeman, Heather Everest, Kate Coughlan, Hui-Leng Tan, Rishwa Vithlani, Andrew Bush

Presented by: Ruth Wakeman, Royal Brompton Hospital, London, United Kingdom

Introduction

IPV is widely recognised as an airway clearance adjunct for peripheral secretion mobilisation in children with neuromuscular disease within an acute hospital setting. Within the UK, IPV is not currently supported in the community.

Aims

To describe the application of IPV (Pegaso™ Dima Italia) in a community setting for two children with SMA.

Methods

Retrospective case description. Data collected on incidence of chest infections, school attendance, clinical safety, symptoms, patient feedback and quality of life

Results

Case 1: SMA 1 resident in long term community facility. Nocturnal non-invasive ventilation, 3 daily airway clearance sessions (including Mechanical insufflation/exsufflation and suction). Developed severe osteoporosis with associated fractures, manual techniques became contraindicated resulting in sub-optimal airway clearance and hospital admissions,

IPV was introduced and clinically well tolerated. Treatment times shorter, increased clearance of secretions observed , less respiratory exacerbations and no acute hospital admissions recorded since introduction. School attendance improved (14% to 98% spring term pre and post IPV) and noted improvement in volume of voice. Patient consistently communicated a preference for IPV.

Case 2: SMA 2 prolonged hospital admission with respiratory deterioration and left lower lobe collapse. IPV introduced within hospital, patient continued to use at home.

IPV was clinically well tolerated with increased observed clearance of secretions.

Carers were trained and IPV safely used in community settings.

Conclusion

IPV was well tolerated, with more effective airway clearance observed in the cases described. Significant quality of life improvements observed with longer term application.

Acknowledgements: Vivisol UK

Central Hypoventilation and Poor Sleep Efficiency in children with Severe Moebius Sequence

Anna Hughes, Harriet Wayman, Bryn Morris, Antonia McBride, Stuart Wilkinson

Presented by: Anna Hughes, Royal Manchester Childrens Hospital, Manchester, United Kingdom

Introduction

The population of children receiving long-term ventilation (LTV) is rapidly expanding, with increasing patient numbers and greater medical complexity due to a range of underlying conditions. One such condition is Moebius sequence, characterised by congenital abducens (cranial nerve VI) and facial (cranial nerve VII) palsy, with preserved vertical gaze. Moebius sequence is associated with respiratory problems and dysphagia secondary to lower brainstem dysfunction.

This case series is based on the experience of one tertiary paediatric centre, with an amassed cohort of six patients with Moebius sequence all requiring mechanical ventilation from birth.

Method

Retrospective case notes review of all patients diagnosed with Moebius sequence requiring LTV at RMCH between 2019 – 2025. All six patients were referred to the LTV service from regional Neonatal unit, The demographics of these patients were ascertained, alongside their ventilation requirements and any cardio-respiratory sleep studies completed.

Results

The 6 patients, 2 males and 4 females, were born between 2017 and 202, were born between 36+3 weeks and 37+2 weeks gestation. 1 patient is on non-invasive CPAP, the other 5 patients require BiPAP via a tracheostomy. 4/6 patients tolerate time off their ventilation. All patients underwent cardiorespiratory sleep studies (CRSS), to ensure adequate ventilation to support growth and development, with scores ranging from AHI 0-2.6 and ODI from 0.85-7.2 on ventilation.

All 6 patients have a low sleep efficiency. On average this group had a sleep efficiency of 73.9%, with a nadir of 31%. Direct comparison was made with

CRSS studies performed in 5 of our general LTV tracheostomy patient group where there was an average sleep efficiency of 82.7% with a nadir of 72%.

Conclusion

In our cohort of patients, all at the severe end of the spectrum of Moebius sequence, problems of central hypoventilation and sleep disturbance are prevalent. Whilst sleep disturbance has previously been described in the literature there are only case reports relating to hypoventilation. Our comparison with a cohort of tracheostomy-ventilated patients without Moebius sequence shows that poor sleep efficiency is not inevitable in tracheostomy-ventilated children and raises the possibility that poor sleep is intrinsic to the condition itself.

Non-Invasive Ventilation: the Growth of a Paediatric Service

Lauren Peaple, Anna Hughes, Stuart Wilkinson

Presented by: Lauren Peaple, Royal Manchester Childrens Hospital, Manchester, United Kingdom

Introduction:

Non-invasive ventilation (NIV) is the use of a mask to administer ventilation to a patient in a home environment, a tertiary paediatric respiratory centre noted that the patient cohort was growing in both population and complexity with patients from the Complexities of Excessive weight Cohort (CEWS) and those with Obstructive Sleep apnoea (OSA).

Methods:

Review was made of all patients referred to the NIV team following a cardio-respiratory sleep study, all patient who were commenced on non-invasive ventilation over the past 6 years had been discussed with an MDT. Patient demographics, underlying condition and use of ventilation was reviewed, to assess how the MDT should adapt to this growth in patient numbers.

Results:

Patient numbers in 2019 cohort was 91 patients, compared with December 2025 - 186 patients, an increase of 101% over the 6 years

New starters have also increased from 2.58 a month average in 2019 to 5.05 per month currently.

The biggest cohort increase has been seen in children with excessive weight gain, in 2019 there were 7 patients compared to 22 in 2025, an increase of 214%.

Patients with excessive weight associated OSA comprise 12% of the overall caseload (the 3rd largest cohort of the group, previously in 2019 this cohort was 7.69%)

Only 1 patient in the last 6 years has managed to be weaned from NIV using weight loss/diet programme.

Conclusions:

The growth of the complications of excessive weight service (CEWS) means the NIV cohort will likely continue to grow, as an MDT we have to adapt to this

growth and have commenced a home cardio-respiratory service to help reduce the waiting list for sleep studies. We have appointed 2 dedicated NIV specialist practitioners, the medical team has increased to 3 consultants, an ANP and a Clinical Fellow. We hope that the new service will highlight these patients sooner allowing more frequent contact alongside a diet programme. The use of home ventilation will be re-audited with the new service adaptations.

Project to improve understanding of air pollutants, exposures and patient awareness, in our children and young people (CYP) with asthma and other respiratory conditions.

Madeleine Glasbey, Sonal Kansra, Samantha Flowers

Presented by: Madeleine Glasbey, Sheffield Children's hospital Trust, Sheffield, United Kingdom

Introduction and Objectives

Exposure to air pollution is the second leading risk factor for death in children under 5, both globally and in the UK. Children are particularly vulnerable to its damaging effects, with recognised potential to worsen symptoms of asthma and other respiratory conditions.

Aim: To understand the specific air pollution issues our CYP with respiratory conditions may be most exposed to and to raise awareness in patients, their carers and staff.

Methods

A patient questionnaire was developed to assess exposure to common indoor and outdoor air pollutants. It was provided to 35 consecutive patients attending General Respiratory (GR) clinic, and 31 patients attending the Complex Asthma (CA) clinic at Sheffield Children's Hospital. Answers were analysed and compared between patients presenting to the GR and CA clinics.

Results

Results highlighted numerous targetable areas for better education, including:

1. Indoor pollutants

    1. 57.1%(GR)and 58.1%(CA) patients do not check personal care/household cleaning products for "chemical free" or "allergy free" labels

    2. 3% (GR) compared to 12.9%(CA) use wood burning stoves or open fires

    3. 71.4%(GR) and 58.1% (CA) dry wet washing over radiators/heaters in the winter with potential for exacerbating mould growth

    4. 65.7%(GR) and 48.4% (CA) burn candles or use plug-in air fresheners in their homes.

2. Outdoor pollutants
    1. 26.5%(GR)and 38.7%(CA) partook in exclusive active travel to school
    2. 82.4%(GR)and 73.3%(CA)walk along a busy road to school

Most families, 80% (GR) and 77.4% (CA), were happy for us to send them specific guidance on how to reduce air pollution most relevant to them. More families in the CA clinic, 54.8% compared to 48.6% in GR clinic, expressed interest in attending a clean air clinic to discuss their individual exposure to air pollution.

Conclusions

The project highlighted multiple areas for improved education around pollution within both cohorts, with potential for even greater benefit in those whose asthma symptoms are difficult to control. Our commentary highlights the eagerness of families for further awareness on how their environment may be impacting their child's respiratory health.

When Success Becomes a Challenge: Severe Weight Gain in a Child with Cystic Fibrosis Treated with CFTR Modulators

Claire Lord, Arshid Murad, Ahmed Hegab

Presented by: Claire Lord, James Cook University Hospital, Middlesbrough, United Kingdom

An 11-year-old boy with Cystic Fibrosis (CF) (homozygous F508del) and pancreatic insufficiency experienced excessive weight gain following initiation of Elexacaftor/Tezacaftor/Ivacaftor (ETI) at age 8. He also has autism, contributing to rigid food preferences dominated by processed foods with minimal fruit and vegetable intake.

Following ETI initiation, there was marked respiratory improvement, including fewer exacerbations, improved lung function, and a reduction in sweat chloride from 118mmol/L to 32mmol/L. However, weight increased rapidly from 49 kg to 57 kg within six months, progressing to 78.9 kg at age 11, equating to an average gain of ~10 kg/year with BMI well above 99.8th centile (Fig. 1).

Despite dietary education, behavioural strategies, and multidisciplinary input, weight gain persisted. Intensive supervised exercise temporarily slowed the trajectory. Contributing factors included family inactivity, anxiety, and difficulty maintaining structure, leading to poor adherence. The degree of obesity prompted referral to a specialist complications of excess weight team due to rising cardiometabolic risk.

While it remains challenging to attribute weight gain solely to ETI, particularly in the presence of confounding factors, we are exploring whether dose modification of ETI could potentially mitigate excessive weight gain in selected cases

Longitudinal trends in fatal and life-threatening asthma in children and young people in England – a retrospective cohort study.

Aleksandra Gawlik-Lipinski, Jonathan Broomfield, Sharmin Shabnam, Erol A Gaillard, Jenni K Quint, Clare L Gillies, David KH Lo

Presented by: Aleksandra Gawlik-Lipinski, University of Leicester, Leicester, United Kingdom

Introduction

Despite available treatments, the number of asthma deaths in children and young people (CYP) in the UK is unacceptably high. Previous attacks and uncontrolled symptoms are known risk factors. Temporal trends in fatal and life-threatening asthma are unknown.

Aim

To describe longitudinal trends in fatal and life-threatening asthma (defined as an ICU-admission) over the past 20 years in CYP in England, stratified by socioeconomic and ethnic groups.

Methods

We conducted a retrospective cohort study using routinely collected linked primary and secondary care, and administrative data from the Clinical Practice Research Datalink (CPRD), Hospital Episode Statistics (HES), Office for National Statistics (ONS) mortality data, and the Index of Multiple Deprivation (IMD). We included CYP aged 5-21 between 2002-2022, with an asthma code as the reason for an ICU-admission, or underlying cause of death. We estimated the incidence rate (IR) of asthma deaths and life-threatening attacks for each year. We explored temporal trends through generalised linear model (GLM) regression.

Results

Between 2002-2022, there were 113 CYP asthma deaths; 21% CYP were non-white, and 39% were from the most-deprived areas (compared to 12% and 24% in the general asthma-cohort, respectively). Mean IR was 0.25 (95%CI 0.23-0.26) deaths/100,000/year. While the GLM regression indicated that asthma death trends remained broadly stable, with only minor fluctuations over time, the mortality incidence rate fell from 0.27 in 2002 to 0.08/100,000/per year in 2022.

1,955 CYP had ICU-admission between 2008-2022; 33% were non-white, and 34% were from the most-deprived areas. The mean IR was 4.25 (95%CI 2.99-5.50)/100,000/year. The spline terms indicated an increase in trends until 2017 and a decrease thereafter.

Conclusions

While asthma mortality remained broadly stable in England during the study period, the IR decreased from 0.27 to 0.08/100,000/year between 2002 and 2022, representing a relative reduction of approximately 70%. Life-threatening asthma IR has improved over time. Our data highlighted that children from non-white ethnic backgrounds and the most deprived areas appear to be disproportionately affected by adverse asthma outcomes. More research exploring the causes of the disparities and introducing targeted interventions is recommended.

Closing the Gap in Paediatric Asthma Care: 24-Hour Post-Discharge Community Review by CHAHT to Enhance National Follow-Up Compliance

Bengisu Bassoy, Jatinder Jheeta

Presented by: Bengisu Bassoy, Dartford and Gravesham NHS Trust, Dartford, United Kingdom

Introduction and Objectives

National guidance, including the National Bundle of Care for Children and Young People with Asthma and the National Review of Asthma Deaths (NRAD), recommends that all children treated for an asthma attack in emergency care receive follow-up by an appropriately trained clinician within two working days. Failure to provide timely review represents a recognised care-pathway gap, associated with potential adverse outcomes. Local barriers include high primary care demand, delays in discharge communication, and difficulties for families in accessing primary-care appointments.

As a quality improvement initiative, we developed a 24-hour post-discharge community review pathway for children admitted with asthma or wheeze. The aim was to improve adherence to national follow-up standards and optimise early post-discharge assessment.

Methods

The 24-Hour Post-Discharge Review pathway was introduced in 2022 through the Community Children's At Home Team (CHAHT) at Darent Valley Hospital serving Dartford, Gravesend and Swanley boroughs. Children discharged following asthma or wheeze admissions received a next day home visit. Reviews included clinical assessment, evaluation of salbutamol use frequency, inhaler technique, and personalised asthma action plan (PAAP) check. Repeat visits were arranged as required, and patients needing outpatient follow-up were identified.

A retrospective service evaluation compared two cohorts: January to June 2022(pre-expansion) and August 2024 to July 2025 (post-expansion to include Bexley borough). Metrics included number of admissions, proportion receiving review, geographical coverage, and 21-day readmission.

Results

In 2022, 95 children were admitted; 54% received CHAHT review, while 37% were outside commissioned areas. Following service expansion, 237 children were admitted between August 2024 and July 2025; 79% received post-discharge review, 7% were outside commissioned areas, and 14% were not reviewed, mainly due to winter capacity pressures (Table 1). No patients required readmission within 21-days. These changes represent a substantial improvement in compliance with recommendations (54% → 79%) and reduction in missed reviews (37% → 14%).

Conclusions

Implementation of the 24-hour post-discharge community review pathway demonstrates measurable improvement in national post-asthma attack follow-up standards.This QIP supports safer early discharge, strengthens self-management, and enables a shift from hospital-based to community-based care. Addressing winter capacity constraints remains a priority for future cycles of service improvement.

The impact of limited-eligibility nirsevimab on paediatric Respiratory Syncytial Virus infection and hospitalisations in an Australian jurisdiction: an observational cohort study

Nicola Irwin, Shevaun Ey, Xiyu Chen, Deepti Raina, Drew Richardson

Presented by: Nicola Irwin, Canberra Health Services, Garran, Australia

Introduction and Objectives

Respiratory Syncytial Virus (RSV) infection has a high health burden for children worldwide. A long-acting monoclonal antibody against RSV, nirsevimab, became available for vulnerable infants (prematurity <37 weeks, First Nations ethnicity, other risk factors e.g. chronic lung disease) in our small Australian jurisdiction in 2024. We aim to characterise the subsequent change in RSV epidemiology and hospitalisations.

METHODS

Our observational cohort study included all infants younger than 2 years residing in our jurisdiction, with laboratory-confirmed RSV and/or receiving a monoclonal antibody against RSV, between April 2022 and March 2025. Cases were followed for emergency department (ED) presentations and hospital admissions. The primary outcomes were the incidences of RSV infection and hospital admission.

RESULTS

We found 2,355 cases of RSV, 1,625 infants presenting to ED and 701 admitted to hospital. Among the 308 infants receiving nirsevimab, the most common indication was prematurity, and 2.4% had breakthrough RSV infection. The incidence of RSV was higher in the post-nirsevimab period (April 2024-March 2025, 89.06/1000 infant years) compared to the pre-nirsevimab period (April 2022- March 2024, 67.99/1000 infant years), reflecting local epidemiological patterns. Accordingly, the incidence of hospitalisation also increased, however more modestly (from 21.46/1000 infant years to 23.94/1000 infant years). Characteristics of hospitalised infants changed in the post-nirsevimab period: age increased (from 9.4 to 10.7 months, p=0.019), the proportion aged <3 months decreased (from 27.6% to 19.7%, p=0.013) and prematurity almost halved (from 13.3% to 7.3%, p=0.041). Clinical characteristics also changed, with an 8-hour reduction in length of stay (p=0.010), a one fifth reduction in the need for respiratory

support ($p<0.001$), and a one third reduction in the use of High Flow Nasal Cannula (HFNC) oxygen therapy ($p<0.001$). There were no significant differences for First Nations infants.

CONCLUSIONS

Our findings suggest our jurisdictions limited-eligibility nirsevimab program was effective in keeping those infants at greatest risk for severe RSV disease out of hospital. First Nations infants, however, were over-represented in hospital and under-served by the first year of the nirsevimab program, warranting further investigation.

Severe Paediatric Asthma: When Management Costs More Than Medicine

Pippa Smith, Lucie Coppinger, Arshid Murad, Ahmed Hegab

Presented by: Pippa Smith, James Cook University Hospital, Middlesbrough, United Kingdom

An eight-year-old boy with asthma, allergic rhinitis, penicillin allergy, and speech delay experienced recurrent, life-threatening exacerbations despite diagnosis and escalation of therapy. Over three years he presented to the emergency department 19 times, with 16 overnight and prolonged admissions, most requiring intravenous bronchodilators. Contributory factors included poor housing, suboptimal adherence, ongoing parental smoking, rural isolation (30 miles from emergency care and 60 mils from tertiary centre), and significant social adversity. He lives with a single mother who relocated to a refuge following domestic violence and now resides in social housing, with no extended family support.

Safeguarding concerns led to implementation of a child protection plan. This enabled an intensive, multi-agency care model including observed inhaled therapy at school, four-weekly specialist review, social care involvement, and home cleaning support. Following this intervention, healthcare utilisation fell markedly, with only one admission over six months, and the child is currently clinically stable. Transport to hospital, previously funded, has since been withdrawn. Despite education and cessation support, the mother continues to smoke outdoors. Management has required substantial healthcare, social care, and educational resources, highlighting that the burden of severe asthma care extends far beyond medication alone.

Escalation, Steroids and Forgotten Discharge Bundle: What Acute Asthma Admissions in a District General Hospitals Really Reveal

Suman Bhattacharyya, James Houston

Presented by: Suman Bhattacharyya, Calderdale Royal Hospital, Halifax, United Kingdom

Background:

Paediatric Asthma remains a major cause of emergency department (ED) presentations and hospital admissions in the UK. The National Review of Asthma Deaths (NRAD) found that 46% of Paediatric Asthma deaths involved suboptimal care. We wanted to do an in-depth analysis of acute asthma admissions in our District General Hospital (DGH), beyond standard National Respiratory Audit Programme (NRAP) metrics.

Our aims were:

* Evaluate escalation and management variations

* Evaluate administration of discharge care bundles

Methods:

Retrospective data was collected to audit all 63 asthma admissions between September 2024 to March 2025. Data was extracted on demographics, treatments received, HDU admissions, time to steroid administration, and adherence to asthma discharge bundle components.

Results:

24 (38%) received intravenous treatment. 23 children (37%) received IV Magnesium, most commonly (74%) in ED. Children escalated to Magnesium in ED received fewer nebulisers prior to escalation compared with ward escalation (average 4 vs 6, $p<0.01$), suggesting lower threshold of escalation in ED setting. HDU admission rate did not differ significantly between ED or Ward Magnesium administration (53% vs 50%, $p=1.0$), length of stay was also similar.

52.5% received steroids within one hour of triage, with significant right skewing with extreme delays up to 23 hours. 79% had prior asthma

admissions, 30% had previous HDU admission and 38% required prior IV treatment: suggesting significant previous disease burden.

Discharge care was inconsistent. 60% of children did not have an asthma nurse review during their admission, 41% lacked documented PAAP, and only 60% were discharged on a preventer. 4 weeks re-admission rate was high at 19% (n=12), 67% of them did not have a preventer prescribed on their discharge letters.

Conclusion:

Our data highlights a high rate of IV escalation without a clear impact on HDU admission or length of stay. Difference in escalation threshold between ED and ward may indicate inconsistency in following guidelines and further standardization is needed. Data on steroid administration suggest need for continued education to meet NRAP quality standard of >95%. Strengthening discharge bundle compliance - particularly preventer prescription and PAAP documentation - represents the most actionable opportunity to reduce readmissions and improve outcomes.

Suprises at every turn: an unusual case of NIV dependence in a preterm T21 Neonate

Polly Robinson, John King

Presented by: Polly Robinson, Royal Brompton Hospital, London, United Kingdom

A 35+5 neonate with Trisomy 21 repeatedly failed to wean from non-invasive ventilation. They remained on CPAP (7cm in air), nasogastrically fed, with subcostal recessions, secretions, a murmur & hypotonia. Investigations showed a compensated respiratory acidosis, negative virology/microbiology, & a hazy chest x-ray. Echocardiography highlighted a perimembranous ventricular septal defect & evolving pulmonary hypertension.

CT revealed compression of the distal trachea. MRI demonstrated a 1cm posterior mediastinal soft tissue lesion which didn't enhance on contrast CT. Simultaneous bronchoscopy with oseophago-gastro-duodenoscopy confirmed a non-pulsatile cyst-like lesion occupying the entire lower tracheal dimension which the bronchoscope could pass over and didn't transilluminate from the oesophagus, plus accompanying tracheobronchomalacia. A laryngeal web was visualised.

After airway multidisciplinary-team discussion the lesion & accompanying lymph node was excised thoracoscopically with simultaneous flexible bronchoscopy. Histology confirmed a bronchogenic cyst with no evidence of malignant spread. Escalating BiPAP pressures were required. Bronchoscopy revealed a weakened posterior tracheal membrane causing tracheomalacia. This was not seen on dynamic CT, however the right upper lobe bronchus was narrowed with lobar collapse. The management of bronchogenic cysts, tracheomalacia & laryngeal web provokes discussion:

* First reported case of concurrent bronchogenic cyst & laryngeal web. Congenital airway malformations are commoner in Trisomy 21 potentially due to hypermethylation of the HOXB cluster. [1,2].

* In addition to mass effects, Bronchogenic cysts are removed due to their potential for malignant transformation. Advances in antenatal imaging uncover an increasing prevalence of potentially previously undetected & asymptomatic bronchogenic cysts. [3,4]. Joint thoracoscopic and bronchoscopic excision is emerging as the preferred method. [5,6]

* Severe tracheomalacia is increasingly managed through posterior tracheopexy to address the common site of the defect in addition to anterior aorto/tracheopexy with good outcomes. [7,8,9,10,11]

* The subglottic stenosis accompanying laryngeal webs means laryngotracheal reconstruction is increasingly favoured.

Beyond Asthma: Addressing Rhinitis and Environmental Triggers in Paediatric Respiratory Care

Karena Krishnavenan, Ayo-Oluwa Adeyemi, Rima Al-Saffar, Abigail Whitehouse

Presented by: Karena Krishnavenan, Paediatric Respiratory, Royal London Hospital, Barts Health NHS Trust, London, United Kingdom

Background

Children attending specialist asthma clinics frequently have complex multimorbidity, including overlapping asthma and allergic rhinitis, and substantial exposure to poor housing. This pilot study describes current practice within a single-centre paediatric asthma clinic, with a particular focus on the burden of co-existing allergic rhinitis, its potential to mimic or exacerbate asthma symptoms, and the implications for a dedicated rhinitis pathway embedded within asthma care.

Methods

A retrospective review was undertaken of consecutive patients aged 0–16 years attending the asthma clinic, grouped into 0–3, 4–11 and 12–16 years. Using a standardised proforma, data were extracted on asthma and allergic rhinitis diagnoses, pharmacotherapy, investigations (skin prick testing, spirometry and FeNO where age-appropriate, blood eosinophils), and recorded exposure to damp/mould and associated housing or environmental health referrals.

Results

Data were available for 65 children (median age 6 years, IQR 5–11). Asthma diagnoses increased with age (0–3 years: 37%; 4–11: 85%; 12–16: 94%), and all children with an asthma diagnosis were prescribed preventer inhalers. Allergic rhinitis was documented in 12% of 0–3, 23% of 4–11 and 56% of 12–16-year-olds, indicating that upper airway disease affected a substantial proportion of older children within this asthma cohort. Among those who underwent skin prick testing, positivity was high (77% in 4–11-year-olds and 75% in 12–16-year-olds), supporting an atopic basis for many rhinitis and asthma-like symptoms. Eosinophil counts were recorded in 87%, 54% and 78% of children in the 0–3, 4–11 and 12–16-year age bands, respectively, and spirometry and FeNO were widely used in older children, contributing to a

biologically informed approach to airway inflammation. Damp or mould in the home was recorded in 37% of 0–3, 49% of 4–11 and 50% of 12–16-year-olds, with many families receiving documented housing or environmental health referrals.

Discussion

Within a specialist asthma clinic, a large subgroup of children had co-existing allergic rhinitis, whose symptoms may overlap with or be misattributed to asthma, supporting development of a specific rhinitis pathway alongside guideline-based asthma pharmacotherapy, lung function testing and environmental action.

Screening for respiratory syncytial viruses in hospitalised children aged >2 years with Multiplex PCR: is it worthwhile?

ANKITA HALDER, Misbah Fakih, Reshma Babu, Siba Paul

Presented by: ANKITA HALDER, Yeovil District Hospital, Yeovil, United Kingdom

OBJECTIVES & BACKGROUND: Respiratory syncytial virus (RSV) has been historically considered to be the most common viral pathogen causing bronchiolitis in children aged <2-years. Since the outbreak of the COVID-19 pandemic, newer molecular diagnostics e.g. Multiplex PCR [mPCR] have become available providing identification for RSV, COVID and Flu viruses. The purpose of this study is to compare the clinicopathological outcomes in children aged >2-years with positive RSV status identified on mPCR, done at admission.

Methods: Children aged >2-years admitted to hospital over 3-years (2022-2024) with a clinical diagnosis of respiratory tract infection (RTI) and had positive mPCR result for either RSV, COVID or Flu viruses, the latter two served as the control group. This was done as a service review. Retrospective data were collected on sex, risk factors (RF), respiratory support, intravenous fluids, chest X-ray and antibiotics. Outcome measures such as length of stay (LOS) and the need for transfer to PICU were also recorded.

Findings: 93 out of 197 (47%) mPCR samples had positive result for either RSV (n=38), COVID (n=34), or Flu (n=21). Out of 93, male:female was 53:40. 39% children had one or more RF, these were higher in RSV group (20/38), as compared to Flu (8/21) and COVID (8/34), this was statistically significant (p-value <0.05). Outside the RSV season (October till February), COVID accounted for most of the admission (p-value <0.01). Only one Flu-positive child needed transfer to PICU. Use of CXR, antibiotics at discharge, need for oxygen and respiratory support with high-flow oxygen therapy were higher in RSV group and all were statistically significant (p-value <0.05). Use of IV fluids were similar in both groups. Cases with RSV-associated RTIs had a longer LOS (>3 days) (p-value <0.01).

CONCLUSIONS: This is possibly the first paediatric study in children aged >2-years and highlighted a higher morbidity in those with RSV-associated RTIs as compared to COVID and Flu viruses. It may be especially important in those with additional risk factors, resulting in a prolonged LOS. Further clinical

research is necessary to establish the exact role that RSV plays in older children (aged >2-years).

Risk identification and follow up of children presenting with acute asthma to hospital: A retrospective review of 198 presentations to one Integrated Care Service (ICS)

Yashasvi Rajeev, Dola Rabiu, Kenza Elayar, Hannah Farley, Konstantina Papadopoulou, Zainab Awan, Alison Summerfield, Stephen Goldring

Presented by: Yashasvi Rajeev, Hillingdon Hospital NHS Foundation Trust, London, United Kingdom

Introduction and Objectives

Approximately one child dies from asthma every four weeks across England (1). Majority are considered preventable (2), making this an NHS clinical priority (3). National guidance recommends secondary care follow-up within 28 days for all children admitted with asthma (3) and to actively identify children with high risk factors(4). We aimed to assess our ability to identify at-risk children presenting with acute asthma to the hospital and offer appropriate follow-up.

Methods

We retrospectively reviewed 207 consecutive electronic patient records (EPR) for acute asthma, presenting to the emergency department from December 2024 to January 2025. Each EPR was evaluated for markers of acute severity and background risk factors categorised by discharge location and follow-up. Acute severity factors were any use of IV bronchodilators, magnesium, oxygen or an ambulance pre-alert call. Background factors were ≥2 acute presentations, ≥3 short-acting beta2 agonists or ≥2 courses of oral steroids in the last twelve months, or continuous IV treatment in the last two years (3,4).

Results

The EPR review took 9.2 minutes on average. Data from 198 presentations was analysed, as 9 cases were incorrectly coded and excluded. Average age was 9.6 years. 120(61%) male, 29% Asian, 19% Black, 15% Mixed race, 13% White and 24% other ethnicities. 77% received corticosteroids, 4.5% continuous IV bronchodilators, 16% nebulised therapy, and 66% spacer therapy. Only 13/32 (41%) inpatient and 6/47 (13%) short-stay admissions were reviewed within 28 days, increasing to 78% and 26% within 90 days, respectively. Only 15/40 (38%) with acute and 23/80 (29%) with background risk factors were reviewed within 28 days, increasing to 65% and 55% within

90 days, respectively. Amongst those who were not followed up were three inpatients managed with IV bronchodilator therapy.

Conclusion

We identified a significant gap in recognition and follow-up of at-risk children with asthma across an ICS, which is likely generalisable across healthcare systems facing similar resource constraints(5,6). This data has supported a CNS pilot intervention using automated notification system to risk-assess the EPR of all acute hospital asthma presentations, contact selected high-risk patients and streamline follow-up, which started in September 2025.

Down the Hatch: Tablet Swallowing in Paediatric Cystic Fibrosis, Respiratory and Allergy Patients

jo colley, Clare Onyon, alex macdonald, wedgbury nicki, watson paul

Presented by: Clare Onyon, Worcester Acute Hospitals NHS Trust, Worcester, United Kingdom

Down the Hatch: Tablet Swallowing in Paediatric Cystic Fibrosis, Respiratory and Allergy Patients

Authors: Onyon, C., Colley, J., Macdonald, A., Wedgbury, N., Watson, P

Introduction and Objectives:

Tablet swallowing practices in paediatric populations vary, with some children continuing liquid medications into adolescence. Tablets are more cost-effective, environmentally sustainable, and widely available. This quality improvement project aimed to identify factors associated with earlier introduction of tablet swallowing and explore perceived barriers among children who had not transitioned to tablets.

Methods:

A patient survey assessing tablet-swallowing ability was conducted at a secondary care children's clinic using Microsoft Forms. Participants were children aged 3–16 years attending cystic fibrosis (CF), respiratory, and allergy clinics. Patients with known swallowing difficulties were excluded. Eighty responses were collected over eight weeks across the three clinic settings.

Results:

Responses were distributed across clinic groups as follows: CF (27%), allergy (30%), and respiratory (including asthma and bronchiectasis) (43%). Participants were aged 3-16 years. Overall, 48% of respondents swallowed tablets, 35% used liquid formulations, and 18% used both. Mean age of tablet initiation was age four for CF, age seven for respiratory, and age 7.5 for allergy patients.

54% of patients took one to two daily medications, whereas 37% (all with CF) took five or more.

By age seven, all CF patients could swallow tablets; in comparison, 25% of allergy and 42% of asthma patients were able to swallow tablets by age seven.

Conclusions:

CF patients started tablet swallowing at the earliest age, with the youngest at 2 years. Earlier initiation appeared to correlate with higher daily medication burden, likely related to Creon requirement, and encouragement by the CF team to start swallowing tablets at an early age.

Reported barriers to tablet swallowing included fear of choking, perceptions of being too young, and lack of prior attempts, highlighting the need for improved patient education and earlier encouragement of tablet use where appropriate. To complete the quality improvement project a resurvey of patients is planned, following the introduction of education materials with a tablet swallowing starter pack.

Establishing a New Direct Access Referral Pathway for Children and Young People with Suspected Asthma in Cambridgeshire and Peterborough.

Vanisha Morar, Kelly Pauley, Karena Fraser

Presented by: Vanisha Morar, Addenbrookes Hospital, Cambridge, United Kingdom

An Eclipse search conducted in July 2024 identified over 18,000 children in Cambridgeshire and Peterborough who had been prescribed an inhaler within the preceding 12 months, equating to approximately 9% of the paediatric population. Among these children, 42% had a recorded diagnosis of asthma, while 58% were receiving inhaled therapy without a formal asthma diagnosis.

In line with the national implementation of Community Diagnostic Centres (CDCs), two centres were established in Wisbech and Ely, introducing a direct-access diagnostic pathway for children and young people with suspected asthma.

The objectives of this pathway were to enhance primary care access to respiratory diagnostics, reduce referrals to secondary care, and improve diagnostic accuracy.

Referrals were triaged by the respiratory lead healthcare scientist based on the following criteria: clinical history suggestive of asthma without a confirmed respiratory diagnosis; reported wheeze, cough, breathlessness, chest tightness, or variable respiratory symptoms; and age ≥5 years.

The study analysed data from 120 patients aged 5–18 years, including anthropometric measures, clinical history, pulse oximetry, fractional exhaled nitric oxide (FeNO), spirometry, and bronchodilator response.

120 children were referred to the direct access pathway. Among children aged 5-9 years 95% completed spirometry and 72% successfully achieved a FeNO measurement.

Out of 120 patients 20% of patients referred for respiratory diagnostics had a positive FeNO. Of those 54% of those patients who had a positive for FeNO had a positive history of atopy.

Out of 120 patients 9.16% of patients demonstrated reversibility (12%). Of those who demonstrated 12% reversibility, 54% of patients had a positive history of atopy.

Referrals have increased, with over 300 children and young people (CYP) assessed since May 2025. This has been associated with a marked reduction in secondary care referrals, with demand increasingly met within the community.

Next steps include continued data collection, reanalysis at 500 patients, introduction of nurse-led asthma clinics alongside respiratory diagnostics to establish a one-stop model, aiding delivery of the core components of the national bundle of care with the goal of reducing avoidable harm, delivering evidence based medicine and reduction of health inequalities by minimising the need for multiple appointments.

Supporting transition of young people with Asthma into adult services: An Asthma specific readiness tool

Kelly Quinn, Angela Jamalzadeh, Amanda Equi, Lynn Sinitsky

Presented by: Kelly Quinn, West Hertfordshire Teaching Hospitals NHS Trust, Watford, United Kingdom

Asthma remains a leading cause of unscheduled care among young people. The transition from paediatric to adult services is identified as a high-risk period for loss of follow up, reduced adherence and increased emergency attendances. There is variation in assessment of transition readiness and limited structured support to develop self management skills specific to Asthma. Generic readiness tools limit young person's engagement and focus on their specific long-term health condition and so the impact on specific clinical outcomes. There was no existing Asthma specific transition tool across our wider Asthma networks. Phase one of this quality improvement project aimed to design a readiness tool for young people with asthma, with the objectives of improving patient empowerment, standardising transition discussion, and reducing asthma related unscheduled care attendances. Phase two, implementation and evaluation, is scheduled for Spring 2026.

An Asthma specific transition readiness tool was co-developed by clinicians, specialist Asthma nurse, specialist transition nurse and young people. The tool assesses key domains including asthma knowledge, inhaler technique, how to manage exacerbations, medication adherence, prescription and GP appointment requests, action plan understanding and community health promotion/prevention access.

The tool will now be implemented into outpatient appointments with young people approaching transition to adult services. Data collection over the next 3 months will evaluate changes in young person asthma understanding, confidence and transition readiness score.

A multi-professional approach with young person co-design successfully created an Asthma specific transition readiness tool. This tool provides a structured person-centred approach to supporting young people with asthma during transition to adult services. By promoting empowerment, self-management skills and readiness for independent care the tool has potential to improve clinical outcomes and reduce avoidable unscheduled care visits.

Poster Presentations – Day 2

Respiratory Consequences of Antenatal Risdiplam in Spinal Muscular Atrophy Type 1

Samantha Cheng, Marjorie Illingworth, Julie Duncan

Presented by: Samantha Cheng, Department of Paediatric Respiratory Medicine, University Hospital Southampton, Southampton, United Kingdom

Spinal muscular atrophy type 1 (SMA1) is a neuromuscular disorder characterised by progressive lower motor neurone degeneration. Historically, SMA1 was associated with death from respiratory insufficiency within 2 years, but outcomes have changed with three therapies – Nusinersen (antisense oligonucleotide), Risdiplam (SMN2 pre-mRNA splicing modifier) and Onasemnogene abeparvovec (gene therapy). Outcomes are best when treatment is initiated pre-symptomatically. Evidence for antenatal Risdiplam is limited, with one published case report (Finkel,NEJM,2025) describing no SMA clinical features through 30 months.

We report siblings with confirmed SMA1 (homozygous SMN1 exons 7–8 deletion; both with 2 SMN2 copies), demonstrating divergent respiratory trajectories. The older sibling (now 4 years) was hypotonic from birth and re-presented at 3 weeks with profound weakness and respiratory compromise. Early oximetry showed frequent desaturations (ODI3 25–28/hr; lowest SpO_2 58–63%), with paradoxical breathing.

BiPAP and cough assist were commenced at 5 weeks (nights and naps) and have continued long-term. He received Nusinersen followed by Onasemnogene abeparvovec in 2021. He has had viral-associated respiratory decompensations requiring increased BiPAP support, including one PICU admission.

Motor function measures, reflecting overall disease severity and associated bulbar and respiratory vulnerability, indicated severe early SMA1 (CHOP-INTEND 8/64; HINE-2 0), improving to moderate after treatment (CHOP-INTEND 48–52/64; HINE-2 15/26). Respiratory morbidity was high (Great Ormond Street Respiratory (GSR) score 20).

The younger sibling (currently 11 weeks old) was diagnosed antenatally and received maternal Risdiplam from 32+5 weeks' gestation, with neonatal Risdiplam commenced on day 2 of life. Gene therapy is planned for January 2026. A sleep study on day 2 was normal. She remains clinically well, with no respiratory symptoms or requirement for ventilatory or airway clearance

support. Early motor assessments were near normal for age (CHOP-INTEND 49/64; HINE-2 2). Respiratory morbidity was low (GSR 3).

This sibling comparison suggests that earlier diagnosis and treatment may be associated with reduced respiratory morbidity and lower ventilatory support requirements. However, follow-up in the antenatally treated sibling is limited and evidence for antenatal Risdiplam remains sparse. Given the time-critical nature of SMA therapy, SMA newborn screening may enable more consistent pre-symptomatic treatment initiation and potentially optimise respiratory outcomes.

Audit of Heated Humidified High-Flow Nasal Cannula Oxygen Therapy (HFNC) use in paediatrics in the East of England: Compliance with guidelines, impact on patient outcome and recommendations for improvement.

Seema Sukhani, Francesca Wright, Jane Jones, Eniko Erdodi

Presented by: Seema Sukhani, East of England Paediatric Critical Care Operational Delivery Network, Cambridge, United Kingdom

Introduction and Objectives:

Heated Humidified High Flow Nasal Cannula Oxygen Therapy (HFNC) is widely used for respiratory support in paediatrics. The Paediatric Critical Care Operational Delivery Network has collaborated with clinicians to create a regional guideline which supports indications, settings and weaning however, variation in practice is recognised anecdotally which may affect patient outcomes, length of stay and resource utilisation. This audit evaluates adherence to the guideline: HFNC initiation, therapy use, weaning methods, impact on duration of treatment and identifies opportunities for improvement.

Method:

An anonymous retrospective audit was conducted across acute inpatient paediatric units (emergency/ward/high dependency areas) in the East of England region, reviewing HFNC use in children 0-18yrs for a 3 month period (Dec ’24 -Feb ’25). Data collected via MS Forms included indication for HFNC, age, co-morbidities/prematurity, presence of red flag features, initiation flow rates, weaning practices, and total duration. Data was analysed in respect of the aims and objectives.

Results:

256 cases were received, 2/3 of patients were treated for bronchiolitis or Viral Induced Wheeze. 93% of cases adhered to recommended flow rates at initiation, compliance regarding weaning was variable, with only 7% strictly following the guideline. Children with co-morbidities/prematurity and those with red flag features prior to initiation had longer treatment durations and took longer to wean. HFNC use decreased with increasing age, where co-morbidities became a more significant factor. Using the nPEWS criteria, HFNC was primarily initiated in children with moderate respiratory distress (63%), 10% of cases exhibited severe symptoms. 82% of children

successfully weaned from HFNC; those with red flag features prior to starting, or with co morbidities/prematurity took longer to wean. Of the 18% that required escalation, 44% had co-morbidities/prematurity and 38% had one or more red flag feature. Evidence of step-down to simple oxygen is noted.

Conclusion:

There is a need for extensive, multidisciplinary regional education about the guideline, with particular focus on weaning regimes. Consideration should be given to the creation of a regional pathway and associated education and cross skilling to facilitate nurse led weaning of HFNC.

Challenges of managing an infant with Generalised lymphatic anomaly (lymphangiomatosis)

Rebecca Ellerton, Caroline Harris, Colin Nice, Ralph Jackson, Kristiana Gordon, Sahar Mansour, Louise Kenny, Matthew Thomas

Presented by: Rebecca Ellerton, Great North Children's Hospital, Newcastle, United Kingdom

We present the case of a three-year-old girl with generalised lymphatic anomaly (lymphangiomatosis) presenting antenatally. An antenatal diagnosis of left sided pleural effusion was made at 20 weeks' gestation. Following birth, she had mild respiratory distress and underwent drainage whilst intubated, leading to radiological resolution of the effusion. Three months after the initial drainage her chest x-ray remained normal, and she was discharged from neonatal follow-up. She represented at 18 months via primary care following investigation of an unrelated issue (constipation). A CT scan confirmed re-accumulation of the effusion with mediastinal shift, as well as newly identified left sided rib abnormalities. The presence of a chylous effusion with lytic rib lesions led to a clinical diagnosis of a generalised lymphatic anomaly.

MRI lymphangiogram demonstrated normal central lymphatic anatomy with no chyle leak immediately visible. Treatment with Octreotide and dietary modifications were commenced. This initially helped but the effusion re-accumulated and Octreotide injections became unsustainable.

Following international consultation with lymphatic experts, and with consideration of this clinical diagnosis, several trials of targeted treatments were given. Propanolol was not felt to be effective, Sirolimus was associated with increased chylous losses over a period of three months. Trametinib initially did show reduction in chyle volumes however small bowel pneumatosis (a recognised side effect) occurred on two separate occasions, so this was stopped.

Visualisation via intranodal lymphangiogram with targeted Lipidiol instillation and thoracic duct embolization were carried out. Despite these interventions the chylous effusion continued to progress, necessitating continuous pleural drainage. Disease at other sites – pericardium, spleen, right femur and chylous vomiting indicative of GI tract involvement - has since developed. Palliative radiotherapy was considered but declined due to morbidity.

Successful ambulatory drainage is currently being achieved by in-dwelling pleural catheter and allows for outpatient follow up off all respiratory support.

We share this case to highlight treatment options and the use of long-term indwelling pleural catheters as means for effective symptom relief.

WAVE study a UK feasibility interventional trial in preterm infants with apnoea of prematurity

Oana Anton, Ramon Fernandez, Sonia Sobowiec, David Wertheim, Heike Rabe

Presented by: Oana Anton, East Sussex NHS Healthcare Trust, Eastbourne, United Kingdom

Introduction and Background

Excessive or persistent apnoea resulting in intermittent hypoxia and bradycardia is associated with long-term neurodevelopmental problems in preterm neonates. Previous research suggested that proprioceptive neurostimulation may reduce apnoeic episodes. The WAVE device delivers gentle transcutaneous vibration to the soles and palms, activating limb proprioceptors and neural pathways to brainstem regions involved in breathing regulation.

Methods

WAVE was a Phase I, early feasibility, single-blind, randomised, sequential assignment crossover trial in preterm infants (<34 weeks gestation) with apnoea of prematurity. The intervention compared vibratory stimulation ON versus OFF, both alongside standard care. Each infant was randomised to one of two sequences.

The primary outcome was cumulative duration of breathing pauses during ON versus OFF periods. Secondary outcomes included cumulative duration and number of desaturation and bradycardia events. Comfort and skin integrity were assessed, and qualitative feedback was collected from parents and nurses.

Results

Of 110 screened infants, 17 were randomised. Analysis showed no significant difference in cumulative breathing pause duration between ON and OFF periods (Ratio OFF/ON = 1.005, p = 0.953). Secondary outcomes also revealed no differences. Comfort and skin assessments indicated no adverse effects. Qualitative feedback from parents and nurses was positive regarding device usability and acceptability.

Conclusions

The WAVE study explored a non-pharmacological approach to apnoea of prematurity through proprioceptive neuromodulation. While no reduction in apnoeic or bradycardic episodes was demonstrated, the device was safe and well tolerated. Positive caregiver feedback supports feasibility and acceptability. Further research with larger cohorts, improved diagnostic tools for apnoeic episodes, and inclusion of shorter hypoxaemia episodes would be key in assessing the device efficacy.

Beyond the clinic: an integrated childhood asthma outreach pilot project

Oana Anton, Geeta Gopal, Davina Piper, Rita Araújo, Victoria Howells, Christopher Newland

Presented by: Oana Anton, East Sussex NHS Healthcare Trust, Eastbourne, United Kingdom

Background

The UK registers among the highest rates of childhood asthma prevalence, emergency admissions, and fatalities across Europe. Recent literature underscores the pivotal role of community and integrated interventions in mitigating emergency healthcare utilisation among children with asthma, suggesting a profound impact on severe cases.

Methods:

A pilot programme of outreach asthma clinics was delivered at a large general medical practice in Eastbourne, East Sussex. The model aimed to strengthen collaboration between primary care, paediatric respiratory secondary care, and local schools. A multidisciplinary approach was used to upskill healthcare professionals through shadowing and targeted education. Consultation methods incorporated wider determinants of health. Feedback from families and participating primary care staff was collected to inform service development and evaluation.

Results

Children and young people and their parents/guardians had positive feedback towards the clinical team and the education received. Families preferred the location due to easier access and quieter waiting room environment. They welcomed the opportunity to co-produce the educational materials being developed for them.

Education sessions for staff were appreciated. Primary care colleagues reported increased confidence in the diagnosis and management of asthma, as well as greater awareness of the wider determinants of health impacting

children with asthma. Participants indicated they would recommend these sessions to other colleagues.

Preliminary data shows a reduction in Accident and Emergency attendances and unplanned admissions for children with asthma; however, causality is difficult to determine due to the intervention being part of a wider, system-wide asthma programme. It is also difficult to quantify the immediate impact of addressing the wider determinants of health during consultation. Feedback indicates the interventions have been well received by both families and staff.

Conclusions

This project provides valuable insights to inform the planning, delivery, and transformation of local asthma services. The integrated care strategy shows promise in improving outcomes for children with asthma. Feedback from children, young people, and their families was positive, and the education sessions were well received by primary care colleagues. Further data analysis is required to assess the full impact of the programme on asthma outcomes following completion of the pilot.

Pulmonary Lymphangitis in a Child with a Mosaic KRAS Disorder

Matthew Ryde, Jayesh Bhatt

Presented by: Matthew Ryde, Nottingham Children's Hospital, Nottingham, United Kingdom

We describe the case of a three-year-old boy with a Mosaic KRAS disorder. He was born at 33+1 weeks gestation following antenatally-detected hydrops fetalis and had two thoraco-amniotic shunts placed. He was intubated and ventilated at birth and chest x-ray showed bilateral pleural effusions, confirmed after sampling as chylothoraces and a large right sided pneumothorax which resolved after chest drain insertion. Following extubation he recovered well and was discharged from neonatal care. He was noted to have an extensive epidermal naevus affecting the left arm and chest.

In the first two years of life he was reported to have episodes of tachypnoea and noisy breathing, sometimes associated with coryzal symptoms. Before two years of age, a biopsy was taken from the epidermal naevus, which revealed the presence of somatic mosaicism for a pathogenic KRAS missense variant. Blood for Trio R14 genome sequencing however showed no pathogenic variant. In light of this and persistent respiratory symptoms, a CT chest was then performed, revealing diffuse bilateral peri-bronchial wall and nodular interstitial thickening extending to the pleura and fissures, consistent with appearances of chronic interstitial lung disease and lymphangitis carcinomatosis. This CT scan also included an incidental finding of a suspicious right sided renal mass, confirmed on biopsy as a perilobar nephrogenic rest, for which he remains under regular ultrasound surveillance. He has developed persistent hypertension, which is under further investigation, however his respiratory health over the past year has been stable.

Reducing Carbon Footprint in Cystic Fibrosis Care: A Sustainability QI Project on Converting Liquid Medications to Tablets in Patients Aged 6 and above

Nao Doylend, Eman Hassanin

Presented by: Nao Doylend, Leeds Children's Hospital, Leeds, United Kingdom

Medicines account for approximately 25% of the NHS's carbon emissions, with liquid formulations producing more than double the carbon footprint of tablet or capsule equivalents due to increased packaging, transportation weight, refrigeration requirements, and waste. In cystic fibrosis (CF), where lifelong polypharmacy is common, reviewing medication formulation offers an opportunity to reduce environmental impact while maintaining patient-centred care.

This quality improvement project aimed to reduce liquid medication use in eligible CF patients aged 6 years and over by quantifying current prescribing, assessing clinical appropriateness and patient-specific factors, supporting conversion to solid formulations, and evaluating the carbon footprint of liquid versus solid medicines.

A service evaluation was conducted among children and young people aged 6–18 years with CF managed at Leeds Children's Hospital between May and August 2025. Patients were identified via the CF Registry, with clinical data extracted from EMIS Web. Data collected included age, medication list and formulation, swallowing ability, current use of tablets or capsules, and reasons for liquid prescribing. Environmental impact was evaluated using the Medicines Carbon Footprint (MCF) Formulary and peer-reviewed publications. Interventions included swallowing readiness assessment using a 'Tic Tac' proxy and parent and carer education via NHS Healthier Together and Kidzmed resources. Patients and carers were engaged during clinic visits and telephone consultations.

A total of 129 patients were reviewed. Eighteen patients (14%) were prescribed at least one liquid medication, and six received all medications exclusively in liquid form. Reasons for continued liquid use included sensory processing difficulties, very small dose requirements, PEG feeding, lack of suitable solid alternatives, and religious or ethical concerns regarding gelatin-

containing capsules. One patient was identified as suitable for conversion from liquid to capsule flucloxacillin and was successfully switched.

This project demonstrates that while liquid medications remain clinically necessary for some paediatric CF patients, routine reassessment of formulation choice can identify opportunities for safer, more sustainable prescribing. Supporting transitions to solid formulations where appropriate can reduce carbon emissions, improve adherence, and treatment burden, contributing to environmentally responsible CF care aligned with NHS Net Zero ambitions.

Diagnostic impact of brain magnetic resonance imaging for children with polygraphy confirmed frequent central apnoea's

Jemma Shanley, Hazel Evans, Harriet Joy, Hasitha Gajaweera, Supriya Shinde

Presented by: Jemma Shanley, University Hospital Southampton, Southampton, United Kingdom

Introduction:

Central sleep apnoea (CSA) is rare, occurring in 1-5% of children, characterised by repetitive apnoea's or hypopneas' with absent or diminished respiratory effort during sleep.1 The British Thoracic Society criteria for a diagnosis of CSA is a central apnoea hypopnea index (CAHI) ≥5.2 It is important to exclude central nervous system pathology as the cause, which can be identified on magnetic resonance imaging (MRI) of the brain.3

Objective:

A service evaluation was carried out at a large tertiary paediatric respiratory centre to identify a detection rate of central pathologies in children aged between 2yr-17yrs of age with a CAHI ≥5 over a 7-year period.

Method:

All children with a CAHI >5 identified by cardiorespiratory polygraphy studies (CRPS) are routinely referred for an MRI brain scan. MRIs requested between January 2017-August 2024 were reviewed. MRI findings were categorised according to the presence or absence of neuro-oncological lesions, congenital malformations or features of cerebral atrophy and whether intervention was required or not. The following parameters were recorded: mean O2, median CO2, total CAHI, patients medical background, age, sex, if they were on non-invasive ventilation (NIV) or required surgical intervention.

Results:

25 Children with CSA (Median CAHI = 8.2, IQR = 4.5, SD = 6.3) aged between 2yr-17yrs (Median age = 7 IQR = 4 and SD = 4.8) were reviewed.

* 12/25 (48%) children had central abnormalities on MRI. 1 had Chiari type-1 malformation, no neurosurgery was required.

* 9/12 (75%) were commenced on NIV or escalation of NIV due to CRPS findings.

* 3/25 (12%) had transcutaneous CO2>6.5KpA, 2 of whom started BiPAP,1 was referred for adenotonsillectomy for OSA.

* 9/25 (36%) referred for MRI had a background of Trisomy 21. 2 had normal MRIs, 5 had pontine hypoplasia, 1 had low cerebellar tonsils, 1 had mega cistern.

Conclusion:

An elevated CAHI >5 events/hr, is frequently associated with intracranial abnormalities. Whilst central apnoea's are a clinical feature in patients with intracranial tumours, none were detected. Pontine hypoplasia has been reported as a characteristic morphological feature of the brainstem seen on MRI in patients with Trisomy 21,4 which could account for central apnoea's.

The Impact of Home Energy Efficiency Measures on Children's Respiratory Health: A Scoping Review

Richa Kulkarni, Eleanor Harrison, Freya Semple, Abigail Whitehouse, Tom Clemens, Olivia Swann

Presented by: Richa Kulkarni, The University of Edinburgh, Edinburgh, United Kingdom

Background

Children's homes play a key role in shaping their respiratory health. Amid rising fuel poverty and Net Zero targets, the UK has implemented Home Energy Efficiency (HEE) measures such as insulation, double glazing, and heating upgrades. While these measures improve thermal comfort and reduce carbon emissions, they may inadvertently compromise indoor air quality, and consequently, respiratory health.

Methods

This scoping review explored the association between HEE measures and respiratory outcomes in children under 18 years of age. A systematic search was conducted across four electronic databases to identify relevant primary research studies published from 2011 to 2025. Eligible studies included interventional and observational designs evaluating HEE interventions and reporting at least one respiratory health outcome in a paediatric population. Two reviewers independently screened all records and extracted key data using a predefined template. Findings were summarised descriptively and narratively.

Results

A total of twenty-three studies met the inclusion criteria, all conducted in high-income countries. Thirteen studies focused on low-income households. Heating upgrades (n=13) and insulation (n=10) were the most frequently evaluated interventions. Nearly half of the studies (n=11) examined multi-component housing programmes, limiting the ability to isolate the effects of specific HEE measures. Despite this, 22 studies reported respiratory health improvements, including reduced asthma symptoms, hospital admissions, and school absences. Additionally, 13 studies observed reductions in indoor pollutant concentrations, including dampness and mould. However, a small

number of studies (n=4) reported adverse outcomes where increased airtightness was not paired with adequate ventilation.

Conclusion

HEE measures are generally associated with improved respiratory outcomes in children. However, careful implementation is needed to avoid unintended harms. Further research is required to isolate the effects of individual HEE measures and extend the evidence base to low- and middle-income countries. These findings support the need for health-informed retrofit policies.

Omadacycline as an alternative to macrolides within maintenance regime in treating Mycobacterium abscessus pulmonary disease in children with Cystic Fibrosis: a case series

Divya Obla Amar Bapu, Robyn Campbell, Stefan Unger, Ian F Laurenson, Don Urquhart, Manjith Narayanan, Emilie Tennant

Presented by: Divya Obla Amar Bapu, Royal Hospital for Children and Young People, Edinburgh, United Kingdom

Background/Objectives:

Mycobacterium abscessus complex pulmonary infection in children with cystic fibrosis (CF) remains a major therapeutic challenge due to poor chemotherapy tolerance and frequent macrolide resistance. Omadacycline, a novel tetracycline with activity against non-tuberculous mycobacteria (NTM), offers an oral alternative to tigecycline and azithromycin with potentially improved tolerability. Evidence in paediatric CF populations is limited.

Methods:

We retrospectively reviewed electronic health records in our centre for children with CF treated with omadacycline for M. abscessus sensu stricto pulmonary infection or colonisation. Clinical, radiological, microbiological, and treatment data were analysed.

Results:

Three adolescents (median age 14 years) with CF had received omadacycline, since 2021. Indications for initiation of therapy included persistent symptoms (lethargy, weight loss, cough) and radiological evidence consistent with NTM pulmonary disease (NTM-PD). Omadacycline was chosen as an alternative to macrolides due to concerns regarding associated side effects or resistance.

Following an intravenous intensification regime (4-6 weeks), omadacycline was incorporated into a 3-drug continuation/maintenance regime alongside clofazamine and nebulised amikacin. Mean omadacycline treatment duration was 20 months and was well tolerated, with no interruptions due to adverse effects. Susceptibility testing was unavailable for omadacycline, however all

isolates demonstrated low minimum inhibitory concentrations to tigecycline (< 0.25 mg/L). None of them were on CF modulators at that point.

Two patients achieved culture negativity for M. abscessus after commencing combination therapy, but the third patient had recurrent re-isolations though became consistently culture negative after 39 weeks of treatment. All patients remain negative having completed treatment for M. abscessus at the time of data collection.

Conclusions:

In this paediatric case series, omadacycline was well tolerated and enabled prolonged outpatient oral therapy for M. abscessus pulmonary infection in adolescents with CF. Although culture clearance timing varied, all three patients ultimately cleared M. abscessus. Higher rates of macrolide resistance-inducible erm gene resistance in around 40% M. abscessus isolates highlights the need for alternative antibiotics for NTM maintenance regimes which have 1) limited choices available and 2) high rates of side-effects. We have demonstrated using omadacycline as an alternative to macrolides in the maintenance regime for M. abscessus is associated with pathogen clearance.

Clinical Profile and Impulse Oscillometry Patterns in Preschool Wheezers: A Cross-sectional Study

Tanvi Bafna, Sanjay Bafna, Siddhant Lalwani, Suman Bisht, Manali Shinde

Presented by: Tanvi Bafna, Bharati Vidyapeeth Deemed to be University Medical College and Hospital, Pune, India

Introduction and Objectives:

Recurrent wheezing is common in preschool children, though only a subset develop asthma by school age. Early identification of high-risk phenotypes is important, but diagnosis is challenging due to limited feasibility of spirometry. GINA 2024 recommends clinical assessment to estimate asthma probability. IOS is a non-invasive tool that detects small airway dysfunction. This study compared IOS parameters across preschool wheezers classified by GINA 2024 probability.

Methods:

This cross-sectional study conducted over one year at tertiary hospital included children aged 2–6 years with recurrent wheezing episodes. Asthma probability was assessed as per GINA 2024- low/some/high. All participants underwent IOS with bronchodilator reversibility testing as per ERS guidelines. Data analyzed using SPSS v17; $p < 0.05$ considered significant.

Results:

Sixty children included (median age 5 years, 55% male). According to GINA, 23.3% had low, 56.6% had some and 20.0% had high probability of asthma. Abnormal IOS seen in 63.3% children. Out of them 44.7% had abnormal pretest and positive BDR while 55.2% had only BDR positivity. IOS differed across GINA groups (χ^2 $p = 0.016$), with abnormal patterns increasing in children with higher probability (Spearman $p = 0.003$). Those with abnormal IOS, 65.7% had some, 23.7% high, and 10.5% low probability clinically. 60.4% children with uncertain clinical diagnosis could be assigned asthma diagnosis based on IOS. Bronchodilator response (BDR) positivity was most frequently detected by X5, followed by R5 and AX. 47.3% had BDR in only one parameter, 36.8% had in 2 parameters and only 13.1% had BDR in all the 3 parameters. In a paired subset (n = 24), parameter-wise differences were not significant (Cochran's Q $p = 0.801$).

Conclusions:

IOS is useful in phenotyping children with asthma with abnormal patterns increasing as clinical probability rises. In children with uncertain diagnosis IOS helped in asthma diagnosis in 60.4% cases. Bronchodilator responsiveness was common among abnormal IOS cases; although X5 and AX appeared more sensitive than R5, paired comparisons did not confirm superiority, Isolated BD response in any of the three indices without abnormal pretest values can be important marker for diagnosis of asthma in preschool wheezers.

Estimation of Radiation Dose in Paediatric Chest Imaging: A Medical Physics Study

Saira Haque, Sarah Gower, Amy Skelton, Tim Howard

Presented by: Saira Haque, King's College Hospital, London, United Kingdom

Introduction and Objectives:

Chest radiography and computed tomography (CT) are essential investigations in the diagnosis and management of paediatric respiratory disease. Children, particularly neonates and younger age groups, are more radiosensitive than adults, highlighting the importance of accurate radiation dose estimation and protocol optimisation. While dose metrics such as dose–area product (DAP) and dose-length product (DLP) are routinely recorded, these do not directly reflect patient risk. The objective of this study is to estimate and compare effective radiation doses from common paediatric chest imaging examinations across age groups.

Methods:

This retrospective medical physics study will include paediatric patients undergoing chest radiography and chest CT for respiratory indications. Patients will be categorised into predefined age groups: neonates (≤1 month), <5 years, <10 years, and <15 years, subject to data availability. Patient weights will be reviewed to ensure values remain within defined ranges, minimising the impact of outliers. Effective doses will be calculated using DAP for plain radiography and DLP for CT examinations. Dosimetry calculations will be performed using PCXMC software for chest X-ray examinations and Virtual Dose CT for chest CT examinations, incorporating age- and size-appropriate paediatric phantoms. Median and range effective doses will be calculated for anteroposterior, posteroanterior, and lateral chest radiographs, and for chest CT examinations, including respiratory contrast studies where applicable.

Results:

Data collection and dose calculations are ongoing. Effective dose estimates will be summarised by age group, imaging modality, and projection, allowing comparison across respiratory imaging examinations.

Conclusions:

This study aims to provide age-specific effective dose estimates for paediatric chest imaging performed for respiratory indications. The findings are expected to support optimisation of imaging protocols, facilitate benchmarking of local practice, and inform multidisciplinary decision-making to balance diagnostic benefit and radiation risk in children.

Reducing prescribing errors in paediatric cystic fibrosis in a DGH

Marianne Tavabie, Cassandra Barrett

Presented by: Marianne Tavabie, Wirral University Trust Hospital, Wirral, United Kingdom

Background

Local paediatric DGH hospital in the North west catering for 34 cystic fibrosis children. Most of the care for these children is done by the specific CF team, however out of hour the on-call general paediatric team are responsible for these patients. A number of incidences occurred where out of hours prescribers did not alter the dosing for antibiotics when the CF patient was on modulator therapy. This projected aims to improve the prescribing in out-of-hour care for patients with Cystic Fibrosis.

Method

A survey of non-CF specialist resident doctors, nurse practitioners and consultants was carrier out to assess confidence in prescribing for patients with CF. A survey was also sent out to assess the confidence patients and families of those with CF had in the prescribers out-of-hours.

Results

13 prescribers responded with only 76% being aware of modulator therapy. Confidence in prescribing for children on modulator therapy was generally low with a median result of 5/10 and 38% of prescribers reporting 0 or 1/10 for confidence. No prescribers felt confident in altering doses of modulator therapy.

17 patients or their families responded with 23% not being aware of modulator therapy interacting with commonly used medications. All reported they were happy to carry alert cards to improve awareness of modulator therapy and the impact this can have on other medications.

Outcome

A teaching program has been implemented in the department to update the non-CF doctors and prescribers. A repeat survey following this is expected to show improved confidence in prescribing for this cohort. A medication alert card has been issued to all children on modulator therapy with cystic fibrosis to emphasize the need for consideration in prescribing additional medication.

Conclusion

Care for CF patients remains largely managed by specialist CF teams however in emergency and out-of -hours situations non-specialist doctors and prescribers need to be aware of the impact their prescribing can cause. Education and alert cards can improve the confidence of both prescribers and families with CF.

Respiratory Outcomes in Children with Chronic Pulmonary Aspiration: A Scoping Review

Nadine Freitag, Dirk Schramm, Shailesh Kolekar, Panayiota Senekkis-Florent, Stefan Unger, Isuru Dharmarathna, Georgios Kaltsakas, Anne Schlegtendal, Jeanne Marshall

Presented by: Nadine Freitag, Department of General Pediatrics, Neonatology and Pediatric Cardiology, Medical Faculty, University Hospital, Düsseldorf, Germany

Background:

Chronic pulmonary aspiration (CPA) is thought to contribute to respiratory morbidity in children, particularly those with neurological or structural comorbidities. However, paediatric evidence is limited and lacks standardized respiratory outcome measures. This uncertainty is problematic because the pulmonary impact of CPA is poorly defined, and the effectiveness of commonly used interventions—particularly restriction of oral feeding—remains unclear, despite their substantial impact on quality of life.

Aim:

To map the literature on respiratory outcomes in children and adolescents with instrumentally confirmed chronic pulmonary aspiration and to summarize preliminary patterns of respiratory morbidity.

Methods:

We are conducting a scoping review in accordance with the Joanna Briggs Institute framework. Comprehensive electronic database searches identified studies reporting respiratory outcomes in children and adolescents with pulmonary aspiration confirmed by instrumental swallowing assessments. Eligible studies include observational designs reporting respiratory morbidity or mortality. Data extraction is ongoing using a standardized, pilot-tested form and is performed independently by two reviewers.

Preliminary results:

After de-duplication, 6,962 records underwent title and abstract screening, with 248 progressing to full-text review. Fifty-one studies met inclusion criteria for data extraction. At abstract submission, 41 studies have been fully extracted and 10 are ongoing. Most studies are retrospective cohort studies or

case series; prospective studies are rare. Videofluoroscopic swallow studies (VFSS) were the most commonly used diagnostic modality, followed by flexible endoscopic evaluation of swallowing (FEES). Children with CPA frequently experience recurrent lower respiratory tract infections, increased hospital admissions, and radiological abnormalities suggestive of chronic lung disease. Neurodisability is the most commonly reported underlying condition. Outcome reporting is highly heterogeneous, with substantial variability in aspiration definitions, follow-up duration, and respiratory endpoints. Standardized measures, including longitudinal lung function assessment, are rarely reported. Evidence on long-term disease progression, irreversible lung damage, and mortality is limited.

Conclusions:

Preliminary findings suggest an association between chronic pulmonary aspiration and increased respiratory morbidity in children. However, available evidence is constrained by heterogeneity and predominantly low-level study designs. Completion of this scoping review will clarify current evidence, identify high-risk groups, and highlight critical gaps to inform future prospective studies and evidence-based management of paediatric CPA.

Linear Trends in ABPA Biomarkers Among Paediatric Cystic Fibrosis Patients: A Service Evaluation at Royal Manchester Children's Hospital

Molly O'halloran, Anirban Maitra, Isabella Jordan, Jenin Marianayagam

Presented by: Molly O'halloran, University of Manchester, Manchester, United Kingdom

Background

Allergic bronchopulmonary aspergillosis (ABPA) is a hypersensitivity reaction to Aspergillus fumigatus, with a higher prevalence of affecting individuals with asthma and cystic fibrosis (CF). Early identification is crucial to prevent irreversible pulmonary damage, however diagnosis remains challenging due to the non-specific nature of available biomarkers. This service evaluation aimed to examine longitudinal trends in five ABPA-associated immunological markers to assess their potential utility for early detection in paediatric CF patients.

Methods

A retrospective service evaluation was conducted using clinical data from 184 paediatric CF patients cared for at the Royal Manchester Children's Hospital. Patients younger than one year of age and those with data gaps exceeding three years were excluded. The five immunological biomarkers evaluated were peripheral blood eosinophil count, total serum IgE, and A. fumigatus-specific IgE and IgG. These parameters were measured during annual case reviews as well as during acute episodes. Values were inputed and analysed using general linear modelling and simple linear regression to assess linear trends and correlations with confirmed ABPA diagnoses.

Results

Among the biomarkers evaluated, A. fumigatus-specific IgG demonstrated the strongest correlation with ABPA diagnosis ($r = 0.321$, $p < 0.001$) and identified all confirmed ABPA cases when applying the provisional diagnostic threshold. Total serum IgE and peripheral eosinophil count showed weaker correlations ($r = 0.131$ and $r = 0.046$, respectively) and identified fewer cases when current exclusion thresholds were applied. In patients with confirmed ABPA, post-diagnostic biomarker levels exhibited no consistent linear trends over time, limiting their utility for longitudinal disease monitoring.

Conclusion

This service evaluation supports the continued use of ABPA biomarkers as part of a multi-factorial diagnostic approach in paediatric CF care. However, their limited performance as standalone tools for early detection and longitudinal monitoring highlights the need for more sensitive and disease-specific biomarkers to improve clinical outcomes.

Diagnostic and management challenges in a rare case of cystic fibrosis co-occurring with Crohn's Disease and Protein-S deficiency

Damilola Oladele, Lucy Chapell, Karnam Sugumar

Presented by: Damilola Oladele, Lancashire Teaching Hospitals NHS Foundation Trust, PRESTON, United Kingdom

Background

Crohn's disease (CD) is more prevalent in Cystic Fibrosis (CF) than general population. Concurrent CF, CD and protein-S deficiency (PSD) is however rarely encountered in Paediatrics. We highlight the challenges involved in diagnosing and managing a child with background CF, learning difficulty (LD) and sensory issues who presented atypically with CD and subsequent diagnosis with PSD.

Case-description

A 15-year-old ex 31-weeker female with pancreatic-insufficient CF (r1158x/r1158x - ineligible for CFTR-modulators), LD and sensory issues presented with fever and inability to weight-bear due to right lower limb (RLL) pain. RLL imaging were normal. CRP and ESR were 22mg/L and 73 mm/hr. respectively. The diagnosis was unclear and she was managed with antibiotics, physiotherapy, rest and pregabalin

Pain initially improved but relapsed after five months. She was re-admitted 10 months after previous admission with prolonged fever, non-weight-bearing, worsening pain of the RLL and weight-loss

MRI of the RLL showed multifocal bone marrow changes and she was treated for osteomyelitis but fever persisted despite prolonged antibiotics-course. She subsequently had bone-biopsy which showed non-infectious non-necrotizing granulomatous inflammation. Afterwards, she developed bowels symptoms on which ground had faecal-calprotectin which was very high prompting gastro-intestinal endoscopy and colon biopsies which diagnosed CD. She responded positively to high-dose corticosteroids which precipitated new-onset diabetes. Steroid was discontinued and was initiated on biologic-therapy.

She developed deep-vein-thrombosis after an extended period of immobility and subsequent pulmonary embolism. Against the background of maternal history of PSD, she was screened and PSD was confirmed. Managing her

complex co-morbidities with LD, sensory issues and significant needle-phobia has been challenging.

Conclusion

Although CF patients are more at risk of CD, diagnosis can be elusive with an atypical presentation. The co-occurrence of CD with CF should prompt active surveillance for PSD. The management of CF ineligible for CFTR-modulator with co-occurring significant comorbidities is challenging.

Service Evaluation of a Recently Established Paediatric Bronchiectasis Clinic

Samuel Arthur, Lucy Everitt, Woolf Walker

Presented by: Samuel Arthur, University of Southampton, Southampton, United Kingdom

Background: Bronchiectasis is an important chronic respiratory disease characterised by abnormally dilated bronchi, airway inflammation and recurrent infections. It is often predisposed by cystic fibrosis (CF) and primary ciliary dyskinesia (PCD) but there are well established services to manage children with these conditions at UHS. Therefore, in November 2024, a non-CF, non-PCD bronchiectasis clinic was established. Using existing resources, children were seen on a 6-monthly basis by a respiratory consultant, respiratory nurse and physiotherapist, in line with European standards.

Aims: To describe the paediatric bronchiectasis cohort, determine if care was delivered as per European standards and assess the benefit of this new clinic. In addition, to compare clinical outcomes to children with CF and PCD at UHS.

Methods: Clinic letters and investigation results were analysed from each clinic appointment and inputted into a bespoke RedCap database. Data was exported into SPSS and analysed according to a pre-determined plan. Existing data from the CF and PCD cohorts were used for comparison.

Results: The 42 children in the cohort (average age 11.1 years) were 67% male. Bronchiectasis was more likely to affect the lower than upper lobes (71.4% vs 33.3%, p=0.004). A positive correlation was found between percent predicted FEV1 and BMI z-score (r(32)=0.397, p=0.02). Notably, percent predicted FEV1 improved significantly between children's first and second clinic visit (Mean: 79.9% vs 85.0%, p=0.012). The bronchiectasis cohort showed a significantly lower % predicted FEV1 when compared to children with CF (Mean: 89.2% vs 98.3%, p=0.012) and was equivalent to PCD (Mean: 89.2% vs 90.5%, p=0.749).

Conclusion: There has been a significant improvement in lung function of the bronchiectasis cohort since the introduction of this new specialised clinic. Children with a low BMI have poorer lung function, therefore a dietitian working with these patients would be beneficial. Lung function of the cohort is significantly lower than those with CF who also benefit from a well-established

clinical service. These points highlight the improvements to children's health a paediatric bronchiectasis clinic brings and the need for additional funding to support this important patient cohort.

Five-Year Service Evaluation of Acute Non-Invasive Ventilation in Older Children

Aamna Ali, Laurell Lockitt, Helen Allman, Seema Sukhani

Presented by: Aamna Ali, Luton and Dunstable Hospital NHS Trust, Luton, United Kingdom

Introduction:

Paediatric services at Luton and Dunstable University Hospital serve a heterogeneous population of children with complex medical needs, resulting in one of the most heavily utilised Level 2 High Dependency Units (HDU) in the region. In response to increasing pressure on Paediatric Intensive Care Unit (PICU) capacity and national recommendations supporting delivery of higher-dependency care within District General Hospitals, an acute non-invasive ventilation (NIV) service for children over the age of one year was introduced. Primary objectives were to reduce rates of intubation and PICU transfer, enabling care closer to home. Five years after service establishment, this evaluation aimed to assess effectiveness and clinical outcomes.

Methods:

A retrospective review of Level 2 HDU activity was conducted over two five-year periods: November 2015–November 2020 (pre-service) and November 2020–November 2025 (post-service). Patients were identified through nursing documentation of HDU admissions. Medical and nursing records were analysed for demographics, underlying medical conditions, indications for NIV, need for escalation to intubation or PICU transfer, and discharge outcomes.

Results:

43 patients were identified as needing enhanced respiratory support (beyond heated humidified high flow nasal cannula oxygen) in the pre-service period, compared with 27 patients following service implementation.

Prior to NIV availability, all 43 patients (100%) were transferred to tertiary centres, with 39 (90%) requiring intubation for safe transfer.

Post-implementation, intubation was avoided in 25/27 cases (93%). Although 6/27 patients (22%) required transfer to intensive care for specialist input, only 2/27 (7%) required intubation prior to transfer.

Two children with life-limiting conditions received palliative NIV, enabling delivery of end-of-life care locally.

Patients receiving NIV were aged 1–14 years, most commonly 5–10 years (33%). Indications included type 1 respiratory failure (48%), type 2 respiratory failure (22%) and respiratory distress (30%). Mean NIV duration was three days.

Conclusion:

Introduction of an acute NIV service for children over one year of age resulted in significant reduction in intubation (93%) and PICU transfer (78%). This service has reduced pressure on retrieval teams and PICU capacity whilst enabling high-quality care, including compassionate end-of-life care, closer to home.

Don’t forget the blood vessels

Nidhi Desai, Abigail Whitehouse, Sarah Brown

Presented by: Nidhi Desai, Paediatric Respiratory, Royal London Hospital, Barts Health NHS Trust, London, United Kingdom

Background:

Childhood systemic vasculitides are rare and often present with non-specific multisystem features, contributing to delayed diagnosis. This case describes an adolescent with pulmonary haemorrhage and constitutional symptoms, subsequently found to have strongly positive PR3 ANCA.

Case history:

A previously well 14-year-old girl was transferred to a tertiary respiratory ward with a two-week history of dry cough, intermittent blood-streaked sputum, progressive dyspnoea, pleuritic chest pain, and low-grade fever. These acute symptoms followed two to three months of frontal headaches, myalgia, progressive arthralgia (initially shoulders, later knees and legs), lethargy, weight loss, and reduced appetite. On admission, she required 4L oxygen and was treated with intravenous co-amoxiclav, azithromycin, and a three-day course of intravenous methylprednisolone, with subsequent improvement and oxygen weaning. Initial blood tests demonstrated marked microcytic, hypochromic anaemia (haemoglobin 79 g/L, nadir 66 g/L), requiring transfusion of two units of packed red cells.

Investigations:

Chest radiography showed bilateral mid- and lower-zone ground-glass opacities suspicious for pulmonary haemorrhage. Contrast-enhanced CT chest revealed multifocal confluent and nodular consolidations on a background of alveolar ground-glass change, in keeping with pulmonary haemorrhage and raising concern for vasculitis. Urine dipstick was positive for blood and protein, with a raised albumin-to-creatinine ratio. Serology demonstrated strongly positive PR3 ANCA (>160). Abdominal ultrasound and MRI/MRA of brain and neck were normal. Audiology was normal; ENT review identified sinonasal inflammation and commenced topical steroid and saline therapy.

Management and outcome:

Antibiotics were switched to oral co-amoxiclav, and she was commenced on folic acid, high-dose cholecalciferol, and omeprazole for gastritis symptoms. She was transferred to a tertiary paediatric rheumatology centre for definitive immunosuppressive therapy and multidisciplinary follow-up.

Nurse-led Vaping Cessation in a Busy London Tertiary Hospital

Mira Osinibi, Dr Cara Bossley

Presented by: Mira Osinibi, Kings College Hospital, London, United Kingdom

Background

Vaping prevalence has increased substantially over the past decade. According to Action on Smoking and Health (ASH) (Fact Sheet, July 2025), approximately 10% of adults in Great Britain vape, equating to an estimated 5.5 million people. The ASH Smokefree July 2025 GB Youth Survey reported that among 11–17-year-olds, 20% have tried vaping and 7% currently vape, representing an estimated 400,000 young people, of whom 40% vape daily. Emerging evidence highlights harms to adolescents, including adverse effects on cognition, concentration, cardiovascular health, and respiratory function.

Aims & Methods

We have set up a nurse led vaping cessation service which involves education on the harms of vaping using motivational interviewing. This intervention supports adolescents in teaching them ways to give up and provides practical support in the hospital setting. We have evaluated this service

Results

Thirty-four children and young people who reported frequent vaping were referred and assessed. Individualised motivational interviews were conducted. The cohort included 19 females and 15 males, with a median age of vaping initiation of 13 years.

Only 12/34 (35%) perceived vaping as harmful. Sixteen adolescents (47%) had a chronic respiratory condition (9 asthma, 4 other respiratory diagnoses, 3 cystic fibrosis). Referrals were also received from general paediatrics and other specialties, including diabetes, haematology, gastroenterology, CAMHS, and orthopaedics.

The median duration of vaping was 1.85 years (range 1-4 years). All participants reported frequent vaping, often day and night, yet 53% did not perceive themselves to be addicted.

Conclusion

We describe a successful nurse led vaping cessation service. We found that only just over a third of adolescents who were vaping perceived it as harmful

or problematic. In order to tackle this harmful problem there needs to be urgent investment in structured vaping cessation services for children and young people.

Service Evaluation of the use of Cardio-Pulmonary Exercise Testing in a Tertiary Paediatric Respiratory Service

Kirstie Rogers, Paul Aurora, Andrew Turnbull

Presented by: Andrew Turnbull, Great Ormond Street Hospital for Children, London, United Kingdom

Introduction: Cardio-Pulmonary Exercise Testing (CPET) is valuable in the assessment of patients with exertional dyspnoea or for evaluating cardiorespiratory fitness in patients with known chest wall, airway or lung pathology.

Aim: To evaluate whether CPET for tertiary paediatric respiratory patients with exertional dyspnoea or known chest wall, airway or lung abnormalities, provided sufficient information to guide management, exclude additional pathology or avoid further tests.

Methods: All CPETs referred from the tertiary respiratory clinics between May 2023 and September 2025 were reviewed. Tests performed prior to May 2023 were also included where retrospective analysis of CPET data was requested by a respiratory consultant to guide patient management. Tests were assessed for quality and those with insufficient data (i.e. patient did not achieve an anaerobic threshold) were excluded from further analysis of cardio-respiratory response to exercise. Due to the small sample size this was a descriptive study without statistical analysis of the data.

Results: Twenty-six CPETs were reviewed; 21 provided data of sufficient quality for analysis. Eight patients were assessed for exertional dyspnoea. Four showed a normal cardiorespiratory response, 3 of whom had evidence of a breathing pattern disorder (BPD). The remaining 4 also had a normal response but demonstrated deconditioning. One of these had exercise-induced bronchoconstriction (EIB) resulting in a change in medical management, and one had features suggestive of inducible laryngeal obstruction (ILO) and was referred to voice clinic.

Thirteen patients were assessed for chest wall, lung or airway pathology. Five had a normal cardiorespiratory response, one with evidence of BPD. Three had a normal response but were deconditioned. Two showed ventilatory

limitation despite an otherwise normal test. Three demonstrated an abnormal cardiorespiratory response; two were referred to cardiology and one had ventilatory limitation and EIB resulting in a change in medical management.

Discussion: For most patients, CPET was a definitive test;16 provided evidence of normal physiological response to exercise ruling out additional pathology and for 5 CPET provided new information resulting in change in medical management or referral to other services. In patients with airway or chest wall disease, CPET was useful in defining impact on exercise capacity.

Is it necessary to assess bronchodilator response in all cases of suspected asthma?

Michael Hughes, Katie Read

Presented by: Michael Hughes, Hampshire Hospitals NHS Foundation Trust, Hampshire, United Kingdom

Note data collection ongoing with final sample size target n=100, to-date collection n=17, average n=8/week.

The most recent NICE guidelines recommend that in suspected asthma where asthma is not confirmed from FeNO or blood eosinophil count, bronchodilator response (BDR) with spirometry should be assessed. A positive response is now generally defined as an increase in FEV1 greater than 10% of the predicted FEV1 and is supportive of an asthma diagnosis. However, the sensitivity of this test in the absence of baseline airflow obstruction is uncertain. Clinical practice suggests that there are few patients able to achieve this change when their baseline spirometry is within normal limits, but is yet to be fully evaluated in paediatric populations.

We have conducted an analysis of BDR response in children and young people (CYP) aged 6-15 years old referred for bronchodilator assessment with suspected asthma (mean age 10.25 years). Those with acceptable baseline spirometry (at least two technically acceptable and reproducible attempts) had a BDR assessment using 400mcg salbutamol via MDI and spacer with spirometry re-assessed 15 minutes later. To date, 12% of patients had evidence of airflow obstruction at baseline (defined as an FEV1/FVC ratio <LLN [-1.645SR]), all of which had a positive BDR response. These had a mean FEV1/FVC of -2.02SR and mean FEV1 of -2.41SR and mean BDR response of 15% predicted. Of those with no evidence of airflow obstruction, 6% had a positive BDR response. These had a mean FEV1/FVC of -0.48, mean FEV1 of -0.21SR and a mean BDR response of 3% predicted **NOTE DATA SUBJECT TO CHANGE GIVEN ONGOING RECRUITMENT**

These results open the conversation around the best practice in performing BDR assessments in CYP for suspected asthma, with a cost and time implication, but also an ethical consideration of the use of medication with evidence to suggest little diagnostic benefit. Our results demonstrate that the utility of BDR testing should be considered based on baseline spirometry and

demonstrate the lack of sensitivity of BDR testing in a paediatric population who do not have obstructive spirometry on testing.

Unmasking Upper Airway Obstruction: Diagnostic Value of Pulmonary Function and Cardiopulmonary Exercise Testing in Paediatric Patients

Paul Burns, David Wynne, Philip Davies, Ross Langley

Presented by: Paul Burns, Royal Hospital for Children, Glasgow, United Kingdom

Introduction:

Asthma is one of the most common chronic conditions in children and adolescents and causes variable small airway obstruction, whereas upper airway obstruction due to vascular rings or tracheomalacia represents rare congenital anomalies. Pulmonary function tests (PFTs) and cardiopulmonary exercise testing (CPET) can provide critical clues to distinguish these patterns of airway obstruction.

Methods:

We report a case series of two children previously diagnosed with asthma and one adolescent with cystic fibrosis (CF). The asthmatic patients experienced persistent exertional dyspnoea despite high-dose therapy, while the CF patient showed a declining FEV_1 despite modulator treatment. All underwent comprehensive PFTs and CPET as part of further evaluation.

Results:

Spirometry revealed flattening of both inspiratory and expiratory limbs in two patients (figure 1a & b), and one demonstrated a sharp expiratory peak followed by a plateau (figure 1c). CPET showed noisy, stridulous breathing and flow limitation in all three cases. Two patients exhibited elevated breathing reserve and failure to reach respiratory compensation, with rising end-tidal CO_2. These findings prompted CT imaging, which confirmed vascular rings in the two asthma cases and tracheomalacia with aberrant subclavian artery compression in the CF patient. Asthma medications were discontinued, and surgical correction was performed for the vascular rings. Surgery for tracheomalacia in the CF patient was deemed high risk with limited potential benefit.

Conclusions:

Upper airway obstruction symptoms can mimic asthma, particularly in children and adolescents with exertional breathlessness. PFTs and CPET are valuable tools for identifying abnormal patterns and should be integrated into the diagnostic pathway for unexplained respiratory symptoms in paediatric populations. Early recognition can prevent prolonged inappropriate treatment and enable timely intervention.

BCG Lymphadenitis : When to Treat?

Ankur Sharma, Sarah Nethercott, Donna McShane, Catherine O'Sullivan

Presented by: Ankur Sharma, Addenbrookes Hospital, Cambridge, United Kingdom

We present the case of a failing-to-thrive infant with clinical suspicion of BCG Lymphadenitis, and our decision making process regarding his management.

Presenting Complaints

3mo Baby S has a warm supra-clavicular lump. He has severe widespread eczema, is failing to thrive, but has no fever or cough. Born at 9th centile, he is now <0.01st centile. He has no hepatosplenomegaly, but sub-centimetric lymphadenopathy in groin and left axilla.

Past History

He was born in UK to non-consanguineous Indian parents at term in a good condition though had suspected sepsis soon afterwards. He has been visited by his grandmother who had Pulmonary TB >10 years ago. He was given BCG vaccine at 1 months of life which shows mild induration

Investigations on admission

* WCC 18, CRP 40

* USS Neck shows a 22 x 20 x 13mm supraclavicular necrotic lymph node with thick fluid centre.

* CXR clear

Diagnostic Dilemma

At this point, we have a 3mo baby who is failing to thrive, has severe eczema and now has a necrotising lymphadenitis on the left. There are now concerns about his immune status. Teams involved – ENT, general paediatrics, paediatric respiratory medicine, dermatology and immunology.

The consensus is to treat the lymphadenitis with broad spectrum IV antibiotics

* Could this be SCID, especially Omenn syndrome given FTT, lymphadenitis and eczema?

* Could this be BCG lymphadenitis, given it’s a left supraclavicular node, and there is suspicion of immunodeficiency?

Progress

He undergoes a FNA with ENT, and the pus shows gram positive cocci in pair/chains.

Given his symptoms and clear CXR, he is deemed a low risk for active TB. But that he developed a left sided lymphadenitis after BCG Vaccine, he is started on treatment with Isoniazid, rifampicin and Pyridoxine. With a suspicion of immunodeficiency, he is started on PJP prophylaxis and anti-fungal treatment.

Further results - Pus Culture: a growth of MSSA, No AFB seen, Immunology tests RULE OUT CGD and SCID, Repeat USS Neck – slight improvement in size.

He improved with a 14 days of IV Antibiotics but had total 4 months of RIF/INH pending comprehensive ruling out of BCG lymphadenitis and immunodeficiency.

Community Diagnostic Centres as novel pathways for diagnosis of children and young people with asthma

Elena Rybka, Maneth Warnapala, Tal Oryan, Louise Pike, Zainab Awan

Presented by: Elena Rybka, Imperial College Healthcare NHS Trust, London, United Kingdom

Introduction

The joint asthma guideline from the British Thoracic Society, Scottish Intercollegiate Guidelines Network and National Institute for Health and Care Excellence (BTS/SIGN/NICE) published in November 2024 (1) recommends objective testing for all children and young people aged 5-16 years in the diagnosis of asthma. Access to these in primary care settings is limited.

Imperial College Healthcare NHS Trust has developed Community Diagnostic Centres to support with diagnosis of children with asthma. Here we evaluate the pathway at Willesden Community Centre in supporting objective testing in children aged 5-17 years who otherwise do not require a referral to secondary care.

Methods

We looked at electronic data from referrals, reports and patient notes over a 3-month period (13/06/2025 - 11/09/2025). We conducted an anonymised telephone survey asking families of children who had attended the centre for feedback on their experience.

Results

In this timeframe 163/170 referrals were accepted; appointments were booked on average within 50 days of the referral being made.

Fifty seven patients underwent testing. 40.4% had FeNO test ≥35 ppb; 14% demonstrated bronchodilator reversibility (BDR). 31.5% had eosinophil count ≥0.5 x109/L. 47 patients underwent feasible skin prick testing: 68% had a positive test to house dust mite (HDM) and 59.5% reacted to ≥2 tested allergens.

Overall 66.7% patients tested had a single positive objective test (FeNO, BDR, positive HDM skin prick test or raised eosinophil count) and 45.6% had >1 positive objective test.

Sixteen families participated in the telephone survey. 73% rated their overall experience at the diagnostic centre at the maximum of 5. 44% had been started on new treatment following the test centre with 85.6% of these being an inhaled corticosteroid inhaler (ICS).

Conclusion

We present this as a novel pathway improving primary care access to objective tests for children and young people with suspected asthma. Through satellite diagnostic centres we can avoid unnecessary hospital referrals and improve diagnosis in line with the updated BTS/SIGN/NICE guidelines.

Next steps include seeking feedback to understand primary care perspectives on the pathway.

References

(1) Asthma: diagnosis, monitoring and chronic asthma management NG245. NICE 2024. Available from: https://www.nice.org.uk/guidance/ng245/

Implementation of the 2024 PIER Network Asthma Guidelines has significantly reduced primary care prescribing of Salbutamol.

Joshua Samuel, Anna Selby, Gary Connett

Presented by: Joshua Samuel, University of Southampton, Faculty of Medicine, Southampton, United Kingdom

Background: Asthma management guidelines have previously recommended use of short-acting β2-agonists (SABA) as needed to treat wheeze. Increased recognition of SABA overuse risks has prompted a shift toward strategies treating underlying airway inflammation. The Wessex Paediatric Innovation Education and Research (PIER) guidelines, launched in September 2024, prioritise SABA-free management plans using Budesonide/Formeterol inhalers (eg. Symbicort) as first-line treatment in children ≥12 years and in 6-11-year-olds with poorly controlled asthma, despite low-dose inhaled corticosteroids.

Aim: To assess the impact of PIER guidelines on prescribing of salbutamol and Symbicort in children aged 1-17 years across primary care organisations in Hampshire and Isle of Wight (n=125, population=2.1 million).

Methods: Monthly prescribing data (September 2023-July 2025) for patients aged 1-17 registered in Hampshire and Isle of Wight practices were obtained from the NHS Business Services Authority, including Symbicort prescriptions and the number of children with ≥ 3 and ≥ 6 salbutamol prescriptions over the past year. Data were stratified by age (1-5, 6-11, 12-17) and gender. Socioeconomic and practice characteristics (practice size, deprivation index, % non-white ethnicity in practice population) were analysed as determinants of outcomes. Paired t-tests compared prescribing data at three intervals: September 2023-July 2025, September 2023-September 2024 (pre-guideline) and September 2024-July 2025 (post-guideline).

Results: The number of children aged 1-17 prescribed ≥6 SABA inhalers in the past year decreased from 3135 (September 2023) to 2990 (September 2024; -4.63%) and 2234 (July 2025; -28.74% overall). The post-guideline reduction (September 2024-July 2025) was significant (paired t-test, $p<0.001$) and largest in 12-17-year-olds (-33.09%), with similar patterns in ≥3 SABA inhaler prescriptions. Symbicort prescriptions increased from 304 (September 2023) to 691 (September 2024; +47.18%) and 1017 (July 2025; +234.50% overall) with significance across all intervals (paired t-tests, $p<0.001$) and largest

increase in 6-11-year-olds (+286.90%). No evidence of differential response to guidelines was found across examined practice characteristics.

Conclusion: These data demonstrate significant reductions in the number of children prescribed ≥3 and ≥6 salbutamol inhalers/year since implementation of the PIER guidelines, alongside an increased prescribing of Symbicort. Further research will look for evidence of improved asthma morbidity and explore ways to overcome implementation barriers across our locality.

More than Just Fluid

Lucy Whittaker, Charlotte Rampton, Stuart Forbes, Claire Edmondson, Woolf Walker

Presented by: Lucy Whittaker, Southampton Children's Hospital, Southampton, United Kingdom

Background: Complex lymphatic anomalies (CLA) are rare disorders that may present with life-threatening effusions and diagnostic uncertainty.

Case presentation: We describe a previously fit and well 3-year-old girl who presented with acute respiratory distress. Imaging demonstrated large bilateral pleural and pericardial effusions, requiring urgent intubation, ventilation, and insertion of bilateral chest and pericardial drains. She was transferred to paediatric intensive care in extremis, having lost 2.5 litres of heavily blood-stained fluid. Chemotherapy was commenced for suspected B-cell lymphoma but discontinued when this diagnosis was excluded. Subsequent review of chest CT raised suspicion of a complex lymphatic anomaly, supported by whole-body MRI and MR lymphangiography showing characteristic features.

Multidisciplinary discussion with international specialist centres enabled early initiation of sirolimus, targeting trough levels of 10–15 ng/mL. Peripheral blood genetic testing was negative; however, lymph node analysis identified a somatic NRAS mutation, confirming the diagnosis and enabling MEK inhibitor therapy with trametinib.

Her PICU course was prolonged and complicated by high-output lymphatic drainage (up to 2 L/day), prolonged ventilatory dependence requiring tracheostomy, chylous effusions requiring parenteral nutrition, suspected protein-losing enteropathy, recurrent pseudomonal sepsis, disuse myopathy, and osteopenia. Following initiation of targeted therapy, drainage output gradually reduced, allowing drain removal by three months. She was discharged from PICU on day 92 and made a sustained recovery, with tracheostomy decannulation, full enteral feeding, and discharge home by day 190. Follow-up imaging demonstrated marked radiological improvement.

Conclusion: This case highlights the importance of early recognition of CLA and the potential benefit of targeted molecular therapy in severe disease.

A Single Ventricle – a Bronchoscopist's Nightmare.

Charlotte Rampton, Michael Griksaitis, Andrew Ho, Gary Connett, Julian Legg, Aiman Alzetani

Presented by: Charlotte Rampton, Paediatric Respiratory Medicine, University Hospital Southampton NHS Foundation Trust, Southampton, United Kingdom

Background:

Massive haemoptysis is a rare but life-threatening complication in patients with Fontan physiology, often related to aorto-pulmonary (AP) collateral formation and abnormal pulmonary vascular remodelling.

Case:

A 14-year-old girl with tricuspid atresia and normally related great arteries, palliated with a Glenn shunt in infancy and a fenestrated extracardiac Fontan at 5 years of age, presented with sudden massive haemoptysis. She had excellent haemodynamics but a history of recurrent haemoptysis secondary to AP collaterals, previously treated with transcatheter embolisation. Her Fontan fenestration had been closed four months earlier to improve oxygen saturations.

She initially expectorated approximately 300 mL of blood, followed by further haemoptysis with hypoxaemia on presentation. Despite antifibrinolytic therapy, blood product resuscitation, and urgent transfer to PICU, she developed recurrent life-threatening pulmonary haemorrhage with severe desaturation and anaemia.

CT angiography (figure 1a) demonstrated new left-sided pulmonary haemorrhage with a suspected collateral vessel. Flexible bronchoscopy (figure 1b) revealed complete obstruction of the left lower lobe bronchus by clot with active bleeding. Management required high-PEEP ventilation, endobronchial adrenaline and tranexamic acid, selective right main bronchus intubation, and emergency thoracic surgical clot evacuation. Cardiac catheterisation (Figure 1c) identified and embolised multiple artero-bronchial and veno-venous collaterals. Ongoing instability prompted consideration of ECMO (Figure 1d). Persistent bleeding localised to the left lower lobe ultimately necessitated lobectomy. Histology was non-diagnostic (Figure 1e). She was discharged after 38 days and subsequently underwent successful heart transplantation.

Conclusion:

This case illustrates the complexity of managing massive haemoptysis in Fontan physiology and the importance of rapid multidisciplinary escalation.

Integrating Speech and Language Therapists into Paediatric Respiratory outpatient clinics: experiences from two London centres

Kirsty Jones, Clare Russell, Clare Lilley, Katharine Harman, Dominic Hughes

Presented by: Kirsty Jones, King's College Hospital, London, United Kingdom

Chronic aspiration in children leads to significant respiratory burden, including frequent respiratory infections, recurrent wheeze, hospital admissions, high antibiotic usage, and persistent airway inflammation ultimately leading to structural lung damage.(1) The prevalence of chronic aspiration in children is poorly quantified and under-recognised with the majority of referrals for Speech and Language Therapy (SLT) assessment coming from hospital-based respiratory services leading to delays in diagnosis.(2) The current evidence supports early recognition of chronic aspiration through clinical evaluation using a multidisciplinary approach and specialist diagnostic procedures to promote timely diagnosis and appropriate management.(1)

The Royal Brompton Hospital and King’s College Hospital paediatric SLT teams provide inpatient and outpatient clinical assessment, including videofluoroscopy when indicated. In addition, SLTs join doctor-led general respiratory outpatient clinics with the aim of supporting and expediting diagnostic process and medical management. SLTs in clinics support decision-making regarding the need for SLT assessments, review patients to support compliance with existing plans or make timely changes to aspiration management plans. No similar funded joint outpatient clinics are known of in the UK. We aim to demonstrate the value added by SLT presence within a general respiratory clinic in relation to patient care.

Parent/carer feedback will be collected from 20 clinics at each hospital (40 total) via telephone interview. Feedback will be collected from doctors and SLTs involved in the clinics via online questionnaire. We will use quantitative analysis where applicable and will analyse qualitative data through thematic analysis. Data collection is ongoing, but preliminary results demonstrate positive perceptions amongst parents/carers who report benefit from joint doctor and SLT consultations, including their ability to take part in a shared decision-making model for their child.

We hope that our findings will highlight the benefits of direct SLT presence in outpatient paediatric respiratory clinics to improved patient care and parent/

carer satisfaction, raising awareness of the need to support such services nationally.

1.Boesch R, et al. Advances in the diagnosis and management of chronic pulmonary aspiration in children. ERJ. 2006;28(4):847-861.

2.Edwards C, et al. Respiratory care burden in children with aspiration. ERJ; 2023;62(suppl 67):PA4473.

When the CLOck strikes three: a case series of congenital lobar overinflation in three paediatric patients

Maeve Gough, Rebecca Peto, Laura Gardner, Thomas Semple

Presented by: Maeve Gough, Royal Brompton Hospital, London, United Kingdom

category: neonatal pulmonology / congenital malformation

Congenital lobar overinflation (CLO) is a rare condition presenting in around 1 in every 20,000-

30,000 live births but is an important differential diagnosis for persistent respiratory distress in

neonatal patients.

We present the cases of three male infants with congenital lobar overinflation referred to one

tertiary paediatric centre within two months who required surgical repair. The ages at referral

ranged from 10 days to 6 weeks. One infant was referred directly from the neonatal unit and two re-

presented to A&E with persistent respiratory distress. In accordance with existing literature, all three

infants were male and the left upper lobe was affected in two out of the three cases. All three cases

underwent surgical management in the form of a thoracotomy and resection of the affected lobe.

CT correctly identified bronchial atresia as the aetiology in all cases where it was present which

highlights its value in the assessment of patients with this condition. Histopathological analysis of

operative samples revealed the diagnosis of pulmonary interstitial glycogenosis in two cases.

Two infants developed lobar collapse post-operatively and underwent physiotherapy, including

Positive Expiratory Pressure (PEP), to good effect.

Our case series enables the comparison of radiological, histopathological and clinical features of

three cases of a rare condition treated at one tertiary paediatric centre. It emphasises the utility of

CT in the assessment of underlying pathology and reviews the surgical and medical interventions in

each case, including the successful use of PEP post-operatively in two cases.

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Acceptability of point-of-care testing in children presenting with acute preschool wheeze enrolled in the PRECISE study

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Background: Experts and families agree on the urgent need to identify phenotypes within preschool wheeze (PW). This would enable effective personalised care and improve corticosteroid stewardship. Current management strategies for acute PW are controversial. Specifically, evidence-based guidance of which children should receive oral corticosteroids (OCS) is lacking. ERS has highlighted the need for tools to identify treatable traits of PW, including markers of type-2 immunity and airway infection. Blood eosinophils (BE) are feasible and useful in outpatient asthma clinic. Viral

aetiology may have a role in determining OCS response. However, neither test has been utilised to guide management of PW in A&E or prospective trial design.

Method: PRECISE is a single-centre randomised feasibility study currently open in Belfast. [NCT06580600] Children aged 24-60 months with mild-moderate

wheeze are randomised to receive OCS or not, based on point-of-care (POC) RSV testing. A BE test is also offered using a finger prick sample. The primary study outcomes are to evaluate acceptability of POC nasal swabs for viral testing and a finger-prick test for BE. The aim is to assess feasibility and acceptability of study design for future definitive trial. Acceptability is assessed using mixed methods

mapped to the validated Theory of Acceptability framework for triangulation.

Preliminary findings*: Survey results indicated high acceptability of both nasal swab and finger prick testing among participants, with 85% and 81% of parents agreeing or strongly agreeing they were acceptable, respectively. When excluding parents who declined the eosinophil test, acceptability rose to 95%.

Parents considered nasal swabs a fair procedure and clearly understood its purpose.

Familiarity with swabs reduced apprehension. Conversely, there was uncertainty about the role of BE testing. Initial anxiety often gave way to greater acceptance post-procedure. Compared to venepuncture, finger prick testing was perceived as a more acceptable method of obtaining eosinophil data.

Conclusions: Parents revealed a balanced consideration of short-term distress versus the perceived value of additional clinical information and overall highly valued trial involvement. Therefore, research to assess the clinical value of these investigations for the acute management of PW is required.

(*39 participants currently enrolled. Full analysis anticipated prior to conference)

UNEXPECTED RECOVERY OF A LOST LOBE

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M is a 6-year-old girl with Nemaline myopathy. M presented with hypotonia and recurrent respiratory deteriorations requiring non-invasive ventilation (NIV). Following prolonged critical care admissions and difficulty weaning off NIV, she was converted to tracheostomy ventilation to aid stability. M continued to have recurrent respiratory infections and a tendency to collapse her left lower lobe. Regular courses of intravenous antibiotics were commenced. The left lower lobe (LLL) became chronically collapsed. It was feared that the LLL was a) irreversibly lost and b) could act as a sump of infection. The safety and value of lobectomy was discussed.

Admissions became increasingly frequent, characterized by rapid deterioration with high-grade fever and raised inflammatory markers. Repeated imaging demonstrated ongoing left lower lobe collapse. Blood cultures and respiratory cultures (tracheal secretions and bronchoalveolar lavage) were negative. Repeated attempts at bronchoscopic reinflation were unsuccessful.

Periodic fever spikes continued despite broad-spectrum antibiotics, leading to investigations for atypical organisms, fungi, and non-tuberculous mycobacteria. An immune work-up did not reveal any immunodeficiency. A possible port-a-cath infection was considered, leading to its replacement. Although fungal cultures were negative, serum Beta-D-glucan antigen assay was strongly positive. A course of anti-fungal medications was commenced alongside continued antibiotics. The fever settled and M remains well. Perhaps remarkably, follow-up CT scan demonstrated almost complete re-inflation of her LLL with no residual bronchiectasis.

Integrating Speech and Language Therapists into paediatric respiratory outpatient clinics: experiences from two London centres

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Chronic aspiration in children leads to significant respiratory burden, including frequent respiratory infections, recurrent wheeze, hospital admissions, high rates of antibiotic usage, and persistent airway inflammation ultimately leading to structural lung damage. (1) The prevalence of chronic aspiration in children is poorly quantified and under-recognised. (2) The current evidence supports early recognition of chronic aspiration through using a multidisciplinary approach to clinical evaluation and specialist diagnostic procedures to promote timely diagnosis and management. (1)

The Royal Brompton Hospital and King’s College Hospital paediatric SLT teams provide inpatient and outpatient clinical assessment, including videofluoroscopy when indicated. SLTs join doctor-led general respiratory outpatient clinics with the aim of supporting and expediting diagnostic process and medical management. SLTs in clinics support decision-making regarding the need for SLT assessments, review patients to support compliance with existing recommendations, or make timely changes to aspiration management plans. No similar funded joint outpatient clinics are known of in the UK. We aim to demonstrate the value added by SLT presence within a general respiratory clinic in relation to patient care.

Parent/carer feedback will be collected from 20 clinics at each hospital (40 total) via telephone interview. Feedback will be collected from doctors and SLTs involved in the clinics via online questionnaire. We will use quantitative analysis where applicable and will analyse qualitative data through thematic analysis. Data collection is ongoing, but preliminary results demonstrate positive perceptions amongst parents/carers, who report benefit from joint doctor and SLT consultations, including their ability to take part in a shared decision-making model for their child.

We hope that our findings will highlight the benefits of SLT presence in outpatient paediatric respiratory clinics to improved patient care and parent/ carer satisfaction, raising awareness of the need to support such services nationally.

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