morbidity in adults however is not often reported in cases of empyema in paediatric populations. Associations include cystic fibrosis, malignancies, alcohol consumption and male gender.

Immunoglobulin levels and sweat test were normal for this patient, and there were no malignant cells in the microscopy report.

He was discharged in excellent condition. He remains under follow up with our team.

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A SYSTEMATIC REVIEW OF CLINICAL PREDICTION RULES TO DIAGNOSE BACTERIAL LOWER RESPIRATORY INFECTION IN CHILDREN IN PRIMARY CARE AND THEIR VALIDATION IN A NEW COHORT

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Pneumonia is the greatest single cause of paediatric mortality.¹ Children are perceived as a vulnerable population and it is well established that primary-care clinicians have a tendency to overprescribe antimicrobials, despite a low level of clinical suspicion for the presence of a bacterial respiratory infection.^{2,3} Clinical prediction rules (CPR) combine variables derived from the history, examination and basic investigations to guide clinicians with a probability of a target diagnosis.⁴ Used correctly, CPRs can serve to reassure clinicians in their decision to avoid therapeutic intervention, adopting a 'watch-and-wait' approach.⁵

This aim of this study was to identify existing clinical prediction rules for hospitalisation due to bacterial lower respiratory tract infection in children in primary care, with the aim to guide antibiotic therapy and to undertake validation of these rules in a novel cohort of children presenting to primary care in Malawi with World Health Organisation clinically defined pneumonia.

OVID MEDLINE & EMBASE databases were searched for studies on the development, validation and clinical impact of clinical prediction models for bacterial LRTI in children between 1946 & Q2-2021. Two reviewers screened all titles and abstracts independently. The study was conducted in accordance with the PRISMA guidelines.⁶

The BIOTOPE cohort (BIOMarkers TO diagnose PnEumonia) recruited children aged 2-59 months with WHO defined pneumonia from two primary care facilities in Mzuzu, Malawi.⁷ Validation of STARWAVE in BIOTOPE employed derivation and internal validation using bootstrapping.

1023 abstracts were identified and following the removal of duplicates, a review of 989 abstracts was conducted leading to the identification of one eligible model – the STARWAVE rule.⁸ Validation of the STARWAVE rule was undertaken in the BIOTOPE cohort which consisted of 494 children with WHO clinically defined pneumonia presenting to primary care in Malawi. The area under the curve (AUC) of the STARWAVE rule for hospitalisation in BIOTOPE was found to be 0.8 (95% C.I 0.75-0.85). However, the AUC of STARWAVE for a confirmed diagnosis of bacterial pneumonia was 0.39 (95% C.I 0.25-0.54).

Clinical prediction rules could facilitate the advancement of antimicrobial stewardship in the area of paediatric pneumonia.

STARWAVE was accurate for predicting hospitalisation, but not bacterial infection. In the absence of a gold-standard indicator for bacterial LRTI, this is a reasonable surrogate and could lead to significant reductions in antibiotic prescription rates. Further work to determine its clinical impact is required.

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IDIOPATHIC CHRONIC EOSINOPHILIC PNEUMONIA: A PAEDIATRIC CASE REPORT

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Introduction Rare pulmonary diseases in childhood continue to be a significant problem in clinical practice because there is a lack of diagnostic and therapeutic guidelines based on reliable scientific evidences. This group of diseases includes idiopathic eosinophilic pneumonias (IEP) that can manifest as acute or chronic or as transient Löffler syndrome. A paediatric case of chronic IEP was reported.

Case Report A 15-year old adolescent was referred to paediatric pulmonologist for suspected asthma. He complained of episodes of shortness of breath and wheezing for a year. Symptoms were more pronounced at night and were also effort induced. The symptoms showed a progressive trend. The boy did not lose weight and had no fever nor night sweats. He denied smoking cigarettes.

Lung function was severely impaired (FVC 61% FEV1 47%) with negative reversibility test. Inflammatory reactants were slightly elevated (ESR 28; CRP 11.1). Severe eosinophilia ($3.36 \times 10^9/L$) of peripheral blood was recorded. Chest CT demonstrated extensive bilateral ground-glass opacifications and peripheral airspace consolidations. Bronchoscopy revealed diffuse redness of tracheobronchial mucosa with severe BAL eosinophilia (eos 75%). In spite to high total blood IgE level of 1265 kIU/L, results of allergic and extensive microbiological

and parasitological processings were all negative. Bone marrow analysis revealed predominance of mature eosinophils without elements of malignant proliferation. Thus, diagnosis of chronic IEP was made. Oral administration of prednisone (0.7 mg/kg) provided a dramatic clinical improvement in two days. The prednisone dose was gradually reduced at intervals of two weeks and inhaled fluticasone 500 mcg daily was added. After 6 months systemic administration of prednisone was discontinued. However, 7 months later relapse of IEP occurred. Again, the boy responded very well to resumed oral prednisone (0.35 mg/kg) which was tapered again over a next 4 months course. Conclusion: The clinical presentation, the course of the disease, the severe eosinophilia of blood and BAL samples, and the absence of other known causes of pulmonary eosinophilia, all these diagnostic clinical elements suggested the diagnosis of chronic IEP. In spite to favourable long-term prognosis further follow-up of the boy is needed because according to modest published clinical experience relapses are always threatening.

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THE USE OF NON-INVASIVE MECHANICAL VENTILATION IN THE PATIENT WITH DEFORMITY OF THE THORACIC SPINE – CASE REPORT

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Introduction Non-invasive ventilation (NIV) refers to the delivery of mechanical ventilation, without the need for an invasive artificial airway (endotracheal tube or tracheostomy tube). There are different types of interfaces available for use with NIV including: total face mask, oronasal mask, nasal mask, and nasal pillows. The use of NIV has been shown to be an effective in patients with acute or chronic respiratory failure. Scoliosis is a complex three dimensional deformity that leads to impaired chest wall mechanics that prevent normal inflation of the lungs resulting in decreased total lung capacity. Rotation of the chest can produce displacement of the intrathoracic structures and compression of the main bronchi, causing upper airway obstruction. As the disease progresses, due to chronic airway inflammation and and secretion retention, small airways also became obstructed. Over time, ventilation-to-perfusion mismatch leads to chronic respiratory failure. In this case, we emphasize the importance of NIV in the patient with chronic respiratory failure caused by thoracic spine deformities.

Case Presentation A 17-year-old girl has been multidisciplinary followed at our hospital since early childhood due to progressive epileptic encephalopathy that led to severe cognitive impairment. The patient does not have major motor deficits and can walk or move unassisted. Due to recurrent respiratory infections associated with bronchial obstruction, at the age of 14 she underwent diagnostic testing at The Pulmonology, and Allergology division. Allergy tests were negative, and since the patient was uncooperative, pulmonary function tests were not performed. Chest radiograph showed significant progression of the idiopathic thoracolumbar scoliosis. Initially, the patient started therapy with inhaled corticosteroids, and later continued with combination therapy of inhaled steroids and long-acting beta2-agonists. Despite therapy, the patient developed severe acute respiratory failure during acute respiratory infections (most often viral infections with secondary bronchopneumonia). In February 2018, she developed severe acute

respiratory failure, from which she was slowly recovering and was discharged home after 20 days of hospital treatment, dependent on oxygen. In September 2018 the patient started non-invasive positive pressure ventilation via oronasal mask using Trilogy100 ventilator. Despite severe cognitive impairment, the patient accepted the mask very well, and she continued to use NIV at home only during sleep, an average 6-8 hours per day. With the use of NIV, the patient achieved satisfactory oxygen saturation throughout the day. In the following two years after NIV introduction, the patient did not have any worsening of the respiratory status and her quality of life was significantly improved.

Conclusion Deformities of the thoracic spine can lead to various pulmonary disorders. In patients with chronic respiratory failure, caused by deformity of the thoracic spine, non-invasive mechanical ventilation has proven to be an effective respiratory support.

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SPONTANEOUS ELIMINATION OF AN INHALED FOREIGN BODY THROUGH THE CHEST WALL

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A 20-month-old boy was referred to us from another hospital due to deterioration of the respiratory function during right-sided bronchopneumonia and a suspicion of foreign body aspiration. At the admission, the boy was subfebrile, tachycardic and tachypnoic, with normal oxygen saturation in the room air, drenched in sweat and with a productive cough. Inflammatory parameters were elevated and X-ray of the lungs showed a suspected inflammatory infiltrate in the right cardiophrenic angle. Bronchoscopy did not show the presence of a foreign body in the respiratory system. During hospitalization, swelling developed in the right infrascapular region with redness, induration and with palpable foreign body in the central part. A surgical incision in the general anesthesia was performed with foreign body extraction. It was a wall barley grass inflorescence (lat. *Hordeum murinum*). Due to the characteristic structure, wall barley inflorescence tends to move in only one direction. In the case shown, after aspiration, the barley grass spikelets migrated through the tracheobronchial tree, penetrating into pulmonary parenchyma to the periphery of the lung, through the pleural layers, intercostal muscles and finally protruded on the chest wall.

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LUNG ABSCESS AS A DIFFERENTIAL DIAGNOSIS OF CHEST PAIN

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Introduction Chest pain is a common diagnosis in children in puberty and adolescents. Lung abscess is a rare cause of chest pain. It occurs as a result of a lung infection that has led to suppurative necrosis and destruction of the affected lung