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ADULT PULMONOLOGY

The elusive bleeding lung

B Abdool-Gafoor, C Hayward
Melomed Gatesville Private Hospital, Cape Town, South Africa
Corresponding author: *B Abdool-Gafoor (bilalgafoor1979@yahoo.co.uk)*

Background. Thoracic endometriosis syndrome (TES) is a rare condition affecting women in their reproductive years, and is often misdiagnosed on initial presentation. Of women with TES, 50 - 80% have coexisting pelvic endometriosis. The most common clinical manifestations of TES are catamenial pneumothorax, catamenial haemothorax, catamenial haemoptysis and lung nodules.
Case presentation. A 29-year-old woman with no known comorbidities presented with recurrent dyspnoea and pleuritic chest pain. She was noted to have a right-sided pleural effusion, which was frankly haemorrhagic on pleural tap. This had previously been treated as pulmonary tuberculosis without improvement. A history of dysmenorrhoea and episodic dyspnoea raised the clinical suspicion of TES. Video-assisted thoracoscopy and laparoscopy were performed, and biopsies of vascular islands of tissue on the thoracic surface of the diaphragm confirmed endometriosis.
Conclusion. A high index of clinical suspicion, as well as a multidisciplinary approach, are imperative in the diagnosis and management of a patient with TES.

The performance of chest computed tomography for the detection of pulmonary hypertension in patients with post-tuberculosis lung disease

M Almubarek, E H Louw, S Griffith-Richards, C Ackermann, N Baines, H Thomson, A J K Pecoraro, C F N Koegelenberg, E M Irusen, B W Allwood
Division of Pulmonology, Department of Medicine, Faculty of Medicine and Health Sciences, Stellenbosch University and Tygerberg Hospital, Cape Town, South Africa
Corresponding author: *M Almubarek (marwanalmobark89@gmail.com)*

Background. Pulmonary hypertension (PH) after tuberculosis (TB) is increasingly recognised as important in settings with a high burden of TB. The use of computed tomography (CT) scan imaging to assist with the detection of PH is currently unknown.
Methods. A retrospective study of patients with post-TB lung disease (PTLD) was conducted from January 2019 to September 2021. Adult patients with both a chest CT scan and an echocardiogram performed within 9 months of each other were enrolled. A diagnosis of PH by echocardiography was made if the right ventricular systolic pressure (RVSP) was ≥36 mmHg or the peak tricuspid regurgitant jet velocity (TRVmax) >2.8 m/s. Radiological criteria for PH included pulmonary artery/ascending aorta (PA/AA) ratio >1, pulmonary artery diameter (PAD) ≥29 mm (males) males or ≥27 mm (females), and right ventricle/left ventricle (RV/LV) ratio ≥1.28. Spirometry was also performed.
Results. Of 173 subjects with PTLD, 52 met the inclusion criteria. Significant correlations were found between the CT-measured PA/AA ratio and RVSP (p=0.0083) and TRVmax (p=0.0582), but not between the CT-measured RV/LV ratio and RVSP (p=0.1729) or TRVmax (p=0.0749). PAD was also significantly correlated with RVSP (p=0.0011) and TRVmax (p=0.0023). The PA/AA ratio identified patients with PH on echocardiography with a sensitivity of ~100%, specificity of 65% and positive predictive value of 39%, indicating a high potential for false-positive diagnosis. The forced vital capacity was 13.7% lower in patients with PH (p=0.044), but the forced expiratory volume in the 1st second was not statistically different.
Conclusion. A low PA/AA ratio can be used to rule out the diagnosis of PH in PTLD, but a high PA/AA ratio requires further investigation for PH.

Ascaris exposure and its association with asthma and atopy in Angolan adults: A case- control study

M Arrais, M Delgadinho, C Ginete, L Veiga, W Dias, J Vasconcelos, M Brito
Department of Pulmonology, Hospital Militar Principal/Instituto Superior, Luanda, Angola; Centro de Investigação em Saúde de Angola (CISA), Caxito, Bengo, Angola
Corresponding author: *M Arrais (mararrais@hotmail.com)*

Background. Infection by *Ascaris lumbricoides* is one of the most common soil-transmitted infections, especially in sub-Saharan Africa. Several epidemiological studies have demonstrated that *Ascaris* infection is associated with asthma and atopy in endemic regions.
Objectives. To investigate the association between *Ascaris* infection and asthma.
Methods. This case-control study was conducted in Luanda, the capital city of Angola, with 157 patients with asthma followed up in the

outpatient pulmonology clinic at the Military Hospital, and 157 healthy volunteers. Atopy was defined by positive skin-prick tests (SPTs) and immunoglobulin G antibodies to *A. lumbricoides* (anti-*Ascaris* IgG) were detected by enzyme-linked immunosorbent assay. Real-time polymerase chain reaction was used to detect *A. lumbricoides* in stool samples. Data were analysed by independent-sample *t*-tests and χ^2 or Fisher's exact tests.
Results. There were more women than men in the study sample (64.6%), and the mean (standard deviation) age was 38.4 (13.6) years. One hundred and six (67.5%) of the cases and 46 (29.3%) of the controls had positive SPTs for any aeroallergens tested, and the most frequent sensitisations involved house dust mites. Only 15 participants (4.8%) were infected with *A. lumbricoides*; however, 62 (39.5%) of the cases and 40 (25.5%) of the controls had positive anti-Ascaris IgG. Having anti-Ascaris IgG was significantly associated with asthma risk (p=0.006), but not with sex, age, body mass index, or even atopy.
Conclusion. Exposure to *Ascaris* was associated with asthma risk among Angolan adults, but not with atopy. More studies are needed in different regions of Angola to better understand this relationship.
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The diagnostic yield of EBUS-TBNA: A single-centre experience from the Middle East

S M Bennji, B Jayakrishnan, Z Al-Hashami, R Kausalya, I Al Qarshoubi

Division of Pulmonology and Head and Neck and Thoracic Program, Sultan Qaboos Comprehensive Cancer Care and Research Centre, Muscat, Oman
Corresponding author: *S M Bennji (saminj12@gmail.com)*

Background. The role of endobronchial ultrasound with transbronchial aspiration (EBUS- TBNA) in diagnosing and staging lung cancer is well established. It has also been used to diagnose various other types of cancers and diseases with mediastinal lymphadenopathy, including inflammatory and infective disorders such as sarcoidosis and tuberculosis.
Objectives. To explore the diagnostic yield of EBUS-TBNA in different cancers and its usefulness in molecular analysis during the first 2 years after establishing the service in a new cancer centre in Muscat, Oman.
Methods. Data on all patients who underwent EBUS-TBNA at Sultan Qaboos Comprehensive Cancer Care and Research Centre from January 2022 to December 2023 were collected retrospectively.
Results. Seventy-five patients underwent EBUS-TBNA, and 106 lymph nodes were sampled with a total of 546 passes. The mean (standard deviation) age was 62.16 (13.3) years, with patients being older (73.43 (9.13) years) in the gastrointestinal group (p=0.010). The mean duration of the procedure was 40.01 (19.07) minutes, and the mean number of passes was 7.38 (3.46) per study. The most common sites of puncture were subcarinal (n=45; 60.0%) and both the right lower paratracheal and the right interlobar node stations (n=17; 22.7%). The primary sites of cancer were the lung (n=31; 41.3%), breast (n=10; 13.3%), gastrointestinal tract (n=7; 9.3%), and other sites combined (n=12; 16%); 4 patients (5.3%) had lymphoma. Eleven patients (14.7%) had non-malignant disease. There were no major complications. Sixty-four patients had an adequate sample for cytological examination, with an overall diagnostic yield of 85.3%, while 11 (14.7%) required further interventions. The yield based on primary site was 90.3% for lung, 60% for breast, and 100% each for gastrointestinal and other cancers (p<0.001). In the 11 patients with non-malignant conditions, the yield was 100%. In 7 out of 13 requests for molecular analysis (53.8%), there was sufficient material.
Conclusion. EBUS-TBNA is safe, with a high diagnostic yield for both malignant and benign conditions. However, for molecular analysis the yield is relatively low

Prediction of pleural metastasis from machine learning models incorporating pleural C-reactive protein in two facilities in Yaoundé Hospital, Cameroon

M E Ngah Komo, C Mbobara, M Massongo, A Kuaban, A Ntyo'o, E W Pefura

Division of Internal Medicine, Faculty of Medicine and Biomedical Sciences, University of Yaoundé I, Cameroon
Corresponding author: *M E Ngah Komo (elisabeth.ngah@fmsb-uy1.cm)*

Background. The diagnosis of pleural metastasis is difficult in Cameroon owing to the poor access to thoracoscopy. We decided to develop machine learning algorithms integrating pleural C-reactive protein (CRP) and clinical and biological parameters to predict pleural metastasis.
Objectives. To determine the performances of machine learning models in the prediction of pleural metastasis.
Methods. This was a cross-sectional study of 302 patients aged ≥16 years presenting with non-purulent pleural effusion, conducted in two hospitals in Yaoundé. Data were collected using a self-administered questionnaire. We tested four models of classification (Random Forest, Gradient Boosting, Neuronal Network and Logistic Regression) to determine the performances of machine learning models in the prediction of pleural metastasis using the R Software Python Scikit-learn package.
Results. Of the participants, 57.9% were male and 42.1% were female. The median age (25th - 75th percentile) was 47 (44 - 48) years. Forty-eight (15.9%) of the patients had pleural metastasis. Among the cases of non-metastatic pleural effusion, we found 44 cases (59.3%) of tuberculosis and 35 cases (24.8%) of chronic nonspecific pleurisy. The determinants of pleural metastasis were age, male gender, primary cancers identified, and pleural CRP and pleural protein levels. After comparison of the performances of the four machine learning models, we selected the Logistic Regression model, which had an area under the receiver operating curve score of 0.80 and the best curb during cross-validation. Neuronal Network ranked second in terms of performance.
Conclusion. Logistic Regression was the machine learning model with the best prediction score for pleural metastasis, followed by Neuronal Network.

Factors affecting the establishment and provision of an outpatient pulmonary rehabilitation programme: Perspectives of physiotherapists working in the Cape Metropole, South Africa

L Labuschagne, A Lupton-Smith, P Gretschel, I du Plessis

Division of Physiotherapy, Department of Health and Rehabilitation Sciences, Faculty of Health Sciences, University of Cape Town, South Africa; Department of Physiotherapy, Groote Schuur Hospital, Western Cape Department of Health and Wellness, Western Cape, South Africa
Corresponding author: *L Labuschagne (lisaphysiosa@gmail.com)*

Background. Chronic respiratory diseases (CRDs) are a significant global health problem. Although extensive evidence shows pulmonary rehabilitation (PR) to be an important tool in CRD management, the uptake and implementation of PR remains a challenge.
Objectives. To explore the factors affecting the establishment and provision of outpatient PR programmes (PRPs) from the perspective of physiotherapists working in the Cape Metropole, Cape Town, South Africa.
Methods. An exploratory qualitative descriptive design was used, whereby data were generated following semistructured interviews with six physiotherapists in the Cape Metropole, who had attempted to provide PRPs to adults. A thematic analysis of the data then took place, with the data being analysed and interpreted through the theoretical lens of the Social Cognitive Theory (SCT).
Results. Three themes emerged following analysis of the data from these six interviews: 'One size does not fit all', 'Sustained and driven by internal factors and external sources of support', and 'Common barriers with differing impacts'. The participants' ability to establish and implement PR was determined by how they enacted their self-efficacy to navigate barriers and mobilise facilitators in their practice contexts.
Conclusion. The need to promote self-efficacy and behavioural capability among physiotherapists in overcoming the barriers to provision of PRPs was emphasised.

Management outcomes of acute pulmonary embolism at Dr George Mukhari Academic Hospital, Pretoria, South Africa

M K Mahlangu, M J Mpe
Department of Internal Medicine, School of Medicine, Sefako Makgatho Health Sciences University, Pretoria, South Africa
Corresponding author: *M K Mahlangu (drkennymahlangu@gmail.com)*

Objectives. To describe the management and outcomes of patients with pulmonary embolism (PE) admitted to the medical wards of a university hospital in Pretoria, South Africa (SA). The outcome of interest was in-hospital mortality attributable to PE.
Methods. This was a retrospective analysis of case records of patients admitted to the medical wards with a confirmed diagnosis of PE during a 3-year study period (January 2017 - December 2019).
Results. A total of 141 medical patients admitted during the study period were confirmed as having PE by computed tomography pulmonary angiograms. The mean (standard deviation) age of the cohort was 48.6 (15.2) years. HIV was considered a risk factor in 38% of the cases. The commonest presenting symptom was acute breathlessness. Just over 40% of the patients (*n=57*) needed care in a high-dependency unit (HDU), with 7 (4.9%) managed in an intensive care unit (ICU) and the remainder in standard medical wards. Treatment consisted of standard parenteral anticoagulation, followed by an oral vitamin K antagonist. None of the patients received any interventional therapies outside of standard medical care. Eleven patients (7.8%) died as a result of the PE: 1 patient in the ICU and 10 in the HDU. There was no statistically significant association between the following variables and the risk of death: presence of right ventricular dysfunction, presence of comorbidities, PE size, gender, or age below or above 60 years. Hospital stay was statistically significantly longer among survivors.
Conclusions. In-hospital mortality in our cohort was elevated in comparison with recent reports from other countries, but much lower than reports from SA. HIV infection was a reasonably important risk factor for PE.

In-hospital management and outcomes of acute exacerbations of chronic obstructive pulmonary disease at a tertiary hospital in Pretoria, South Africa

N P Mlongo, K Kalidas, M J Mpe
Division of Respiratory Medicine, Department of Internal Medicine, School of Medicine, Sefako Makgatho Health Sciences University, Pretoria, South Africa
Corresponding author: *N P Mlongo (nipmhlongo@yahoo.com)*

Background. Chronic obstructive pulmonary disease (COPD) is a significant cause of ill-health and mortality throughout the world.
Objectives. To describe the management and outcomes of patients admitted to medical wards with an acute exacerbation of COPD.
Methods. This was a cross-sectional study of a cohort of medical patients who met the inclusion criteria.
Results. A total of 97 patients were studied. The mean age was 64.6 years, and the majority (73.2%) were male. Over 70% (73.2%) were current tobacco users, with 26% having >40 pack-years of use. Thirty-eight patients (39.1%) had had at least one previous exacerbation requiring hospitalisation during the past 12 months. More than 75% (79.4%) of the flare-ups were deemed infective in origin. One patient had a pulmonary embolus as a precipitant. Seven patients required admission to high care. Eighteen patients (18.5%) died as a result of the exacerbation. There was no association between the presence of comorbid disease, a previous episode of exacerbation or gender and poor outcome. There were no significant differences between survivors and non-survivors with regard to age, mean pack-years or admission biochemical abnormalities. Survivors had a significantly longer hospital stay ($p<0.001$).
Conclusion. COPD exacerbations in this study led to significant loss of life, even though an association between poor outcome and factors traditionally associated with increased mortality could not be found. This finding suggests that all flare-ups of the disease carry a potential for poor outcome, regardless of the presence or absence of known risk factors for poor outcome.

Accuracy of AI-driven computer-aided detection to identify cavitary disease as a marker of infectious tuberculosis during community-based active case-finding

A J Scott, S V Kik, T Perumal, P Gina, M Masikati, S Jaumdally, S Oelofse, L Kühn, J Swanepoel, M Ruhwald, A Esmail, K Dheda
Centre for Lung Infection and Immunity, Division of Pulmonology, Department of Medicine and University of Cape Town Lung Institute, Cape Town, South Africa; Centre for the Study of Antimicrobial Resistance, South African Medical Research Council, Cape Town, South Africa
Corresponding author: *K Dheda (keertan.dheda@uct.ac.za)*

Background. The infectiousness of individuals with tuberculosis (TB) residing in the community who do not self-report to healthcare facilities remains poorly defined.

Objectives. To determine whether computer-aided detection (CAD) could accurately identify cavitary disease (proxy for infectiousness) during community-based active case-finding (ACF) for TB.
Methods. Participants with microbiologically confirmed TB (sputum Xpert Ultra and/or culture positivity), recruited from two community-based ACF studies in South Africa (XACT-3 and XACT- 19), underwent point-of-care (POC) chest radiography analysed by CAD (qXR v4.0) and two expert human readers. All participants underwent positron emission tomography-computed tomography (PET-CT) scanning. The accuracy of CAD in detecting cavitary disease was compared with that of PET-CT (radiological reference standard; presence of cavitation plus SUVmax >2.5 suggesting metabolically active cavitary disease was used as a proxy for probable infectiousness).
Results. A total of 1 455 participants were enrolled, of whom 112 (7.7%) had microbiologically confirmed TB (n=54/112 (48.2%) were asymptomatic). Chest radiographs and PET-CT scans were available in 82.1% (n=92/112); 61/92 (66.3%) had cavitary disease on PET-CT (median SUVmax 5.4). At the developer-recommended cavity threshold, CAD sensitivity and specificity were 60.7% (95% confidence interval (CI) 47.3 - 72.9) and 84.6% (95% CI 65.1 - 95.6), respectively. Compared with human readers, CAD had statistically similar sensitivity (60.7% (95% CI 47.3 - 72.9) v. 66.7% (95% CI 52.5 - 78.9)), specificity (84.6% (95% CI 65.1 - 95.6) v. 73.1% (95% CI 52.2 - 88.4)), and positive predictive value (90.2% (95% CI 78.6 - 95.9) v. 83.7% (95% CI 72.7 - 0.9)).
Conclusion. A high proportion (two-thirds) of individuals with microbiologically confirmed TB had evidence of metabolically active cavitary disease, suggesting that they were probably infectious. CAD may be a useful POC rule-in test to detect cavitary disease, and could inform contact tracing and treatment strategies in endemic settings.

Clinical evaluation of computer-aided digital X-ray detection of pulmonary tuberculosis during community-based screening/active case-finding

A J Scott, T Perumal, A Pooran, S Oelofse, T Mthiyane, M van der Walt, Z Z Qin, J Fehr, A D Grant, E B Wong, A Esmail, K Dheda

Centre for Lung Infection and Immunity, Division of Pulmonology, Department of Medicine and University of Cape Town Lung Institute, Cape Town, South Africa; Centre for the Study of Antimicrobial Resistance, South African Medical Research Council, Cape Town, South Africa

Corresponding author: *K Dheda (keertan.dheda@uct.ac.za)*

Background. Computer-aided detection (CAD) has been recommended as a tuberculosis (TB) screening tool. However, few studies have evaluated CAD in a community-based setting.
Objectives. To determine the clinical utility of CAD during community-based active case-finding (ACF).
Methods. Individual patient data were pooled from five community-based ACF studies in South Africa. CAD-interpreted chest radiography (CAD4TB v7) was assessed against a microbiological reference standard (sputum Xpert Ultra and/or culture positivity). The clinical utility of CAD was evaluated, and a preliminary cost analysis was performed.
Results. Of 20 770 individuals enrolled across all studies, 530 (2.6%) had microbiologically proven TB. Evaluable controls (non-TB) and cases (TB) were randomly selected from this parent population in a 2:1 ratio (*n*=501 TB positive and *n*=938 TB negative; total *N*=1 439). CAD achieved an area under the receiver operating curve (AUC) of 0.83 (95% confidence interval (CI) 0.80 - 0.85). At fixed sensitivities of 90% and 85% (thresholds of 5 and 10), specificity was 44.9% (95% CI 42.5 - 47.3) and 54.1% (95% CI 51.7 - 56.5), respectively. CAD (AUC) performed worse in individuals living with HIV (v. HIV negative) (0.76 v. 0.85; *p*=0.004) and in asymptomatic (v. symptomatic) individuals (0.79 v. 0.85; *p*=0.008). Nevertheless, CAD-directed Xpert (v. universal Xpert testing) reduced cost by ~20% per individual with TB diagnosed, at the detriment of a ~10% reduction in the true TB positives detected.
Conclusion. In the setting of community-based ACF, CAD did not meet the World Health Organization screening test target product profile (>90% sensitivity, >70% specificity) and performed more poorly in certain subgroups. However, a context-specific CAD-directed strategy could still be cost-saving. These data inform community-based ACF strategies aiming to disrupt the TB transmission cycle.

Can AI-driven computer-aided detection optimise Xpert-orientated community-based active case-finding for TB (XACT-19)? An interim trial progress report

A J Scott, A Chizema, G Chongo, T Perumal, S Jaumdally, D Milimo, S Oelofse, A Esmail, J Mutsvangwa, H Ayles, K Dheda

Centre for Lung Infection and Immunity, Division of Pulmonology, Department of Medicine and University of Cape Town Lung Institute, Cape Town, South Africa; Centre for the Study of Antimicrobial Resistance, South African Medical Research Council, Cape Town, South Africa

Corresponding author: *K Dheda (keertan.dheda@uct.ac.za)*

Background. Approximately one-third of individuals newly ill with tuberculosis (TB) are undiagnosed/unreported. Detecting such individuals in endemic communities has been restricted by the lack of sensitive, point-of-care (POC) diagnostic tools.
Objectives. To determine the impact of computer-aided detection (CAD) during community-based active case-finding (ACF).
Methods. In an ongoing multicentre open-labelled randomised controlled trial, individuals at risk for TB were recruited from TB/HIV-endemic communities in South Africa (SA), Zambia and Zimbabwe. Using a low-cost mobile van staffed by three healthcare workers and equipped with an ultra-portable X-ray and GeneXpert system, participants were randomised into either POC 'CAD+Xpert' (CAD followed by Xpert in CAD-positive participants) or POC 'Xpert only' (Xpert in all). The reference standard was microbiologically proven TB (Xpert-MTB/RIF-Ultra and/or sputum culture positivity).
Results. As of March 2024, 1 667 participants had been randomised (SA *n*=544 (32.6%), Zambia *n*=756 (45.4%), Zimbabwe *n*=367 (22.0%)). There were 714/1 667 people living with HIV (42.8%), of whom 108/714 (15.1%) were newly diagnosed. A total of 56/1 667 participants (3.4%) tested positive for TB (SA *n*=37/544 (6.8%), Zambia *n*=18/756 (2.4%), Zimbabwe *n*=1/367 (0.3%)), of whom 27/56 (48.2%) were subclinical (i.e. asymptomatic) and 17/56 (30.4%) were smear positive. Among the 826 participants randomised into the CAD+Xpert arm, CAD detected 17/21 individuals with TB (81.0%). There were 337/826 CAD false positives (40.8%). However, CAD was truly negative in 468/826 participants (56.7%) who did not undergo Xpert testing.

Conclusion. Community-based ACF detected a high burden of TB, TB-HIV and undiagnosed HIV. Approximately 50% of participants had asymptomatic TB. CAD missed ~20% of TB, and false-positivity rates in those without TB were high. Nevertheless, Xpert testing was halved.

A cross-sectional study of adult patients presenting with airways disease exacerbations in Cape Town, South Africa

M Stolbrink, L Liebenberg, T Ndelana, K Petersen, S Griffith-Richards, K Mortimer, B Allwood

Division of Pulmonology, Department of Medicine, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa; Clinical Sciences, Liverpool School of Tropical Medicine, UK

Corresponding author: *M Stolbrink (mstolbrink@doctors.org.uk)*

Background. There is a high burden of airways diseases in South Africa. Individuals experiencing exacerbations have increased healthcare utilisation and risk of death. Diagnoses are often made without investigations, yet some diseases, such as asthma, require specific treatments.

Objectives. To characterise the diagnoses of adults attending hospitals with exacerbations.

Methods. We conducted a cross-sectional study of adults with chronic airways disease exacerbations attending two hospitals in Cape Town. Participants were recruited on presentation and attended for investigations at least 8 weeks later. Burden of disease questionnaires, full lung function studies with bronchodilator reversibility, serum eosinophil count, total and specific immunoglobulin E, exhaled nitric oxide measurements, sputum analysis and high-resolution computed tomography were completed.

Results. Between November 2021 and March 2023, 224 participants were recruited, of whom 101 attended for investigations; 40 (17.9%) died before investigations could be completed. Most were current (49.5%) or ex-smokers (40.4%), and 46 (45.5%) had previously had pulmonary tuberculosis (TB). Serum (or any indicator of) eosinophilia was present in 19/100 (19.0%) (and *n*=51/101; 50.5%) participants. Spirometric obstruction (*n*=62/82; 75.6%), hyperinflation (*n*=45/61; 73.8%) and reduced diffusion capacity (*n*=29/44; 5.9%) were common. Post-TB lung disease (PTLD) with chronic obstructive pulmonary disease (COPD) (*n*=28/101; 27.7%) or COPD alone (*n*=27/101; 26.7%) were the most common diagnoses. Ten participants had asthma.

Conclusion. COPD and PTLD were common among patients attending hospital with an exacerbation; modifiable risk factors (TB, smoking) were also common. Approximately 1 in 5 patients died shortly after recruitment. Strategies to serve this patient group better are urgently needed.

Transbronchial lung cryobiopsy and mediastinal lymph node cryobiopsy: Experience from a resource-limited African setting

A Esmail, K Tsoka, R Hofmeyer, J C Maluleke, H Donson, R Roberts, T Pennell, N Vorajee, M Emhemed, S Eknewir, B Mbena, K Dheda

Centre for Lung Infection and Immunity, Division of Pulmonology, Department of Medicine and University of Cape Town Lung Institute, Cape Town, South Africa

Corresponding author: *K Dheda (keertan.dheda@uct.ac.za)*

Background. Transbronchial lung cryobiopsy (TBLC) is a relatively new technique recommended for sampling of lung parenchyma in patients with suspected diffuse parenchymal lung disease (DPLD), and as an alternative to surgical lung biopsy. A more recently introduced technique is endobronchial ultrasound-guided mediastinal cryobiopsy (EBUS-TMC) to enable tissue biopsy of mediastinal lymph nodes. However, there are no data on the feasibility of implementing these techniques in a resource-poor African setting where there is a chronic bed shortage and same-day discharges are preferable.

Methods. We performed an audit of lung and lymph node cryobiopsy procedures performed at the E16 Respiratory Clinic, Groote Schuur Hospital, Cape Town, South Africa. Indications, diagnostic performance outcomes and lessons learned were documented and analysed.

Results. Sixteen patients underwent 19 cryobiopsy procedures, performed under general anaesthesia (*n*=11 TBLC, *n*=8 EBUS-TMC, including 3 patients in whom TBLC and EBUS-TMC were performed concurrently). The main indications were evaluation of DPLD and suspected lymph node malignancy. The diagnostic yield was 63.6% for TBLC (*n*=7/11; *n*=2 NSIP, *n*=2 sarcoidosis, *n*=1 respiratory bronchiolitis-interstitial lung disease; *n*=1 organising pneumonia, *n*=1 nonspecific chronic inflammation) and 50% for EBUS-TMC (*n*=4/8; *n*=1 plasmacytoma, *n*=1 lymphoma, *n*=2 cryptococcus infection, *n*=1 tuberculosis). Two patients had moderate bleeding while 3 patients had mild bleeding, and all patients were discharged on the same day.

Conclusion. TBLC and EBUS-TMC, with avoidance of surgical lung biopsy in most patients and with same-day discharge, are feasible in an African setting. These data inform clinical practice and programme implementation in resource-poor settings.

The prevalence of pulmonary hypertension in post-tuberculosis and active tuberculosis populations: A systematic review and meta-analysis

J K van Heerden, E H Louw, F Thienemann, M E Engel, B W Allwood

Medical Sciences Division, Nuffield Department of Surgical Sciences, University of Oxford, UK

Corresponding author: *J K van Heerden (jenniferkatevanheerden@gmail.com)*

Background. The prevalence of tuberculosis (TB)-associated pulmonary hypertension (PH) has not previously been quantified, resulting in an under-appreciated burden of disease.

Objectives. To estimate the prevalence of PH in post-TB and active TB populations.

Methods. In this systematic review and meta-analysis, we searched PubMed/Medline, the Cochrane Library, EBSCOhost, Scopus, African Journals Online and Google Scholar, with no language restriction, for available literature published after 1950. Eligible studies described adult participants (≥16 years), with documented evidence of active or prior TB, diagnosed with PH. Study quality was assessed using a risk-of-bias tool specifically developed for prevalence studies. Aggregate prevalence estimates with 95% confidence intervals (CIs) were synthesised using a random-effects meta-analysis model, incorporating the Freeman-Tukey transformation. Subgroup analysis was conducted to ascertain prevalence estimates in specific patient populations.

Results. We identified 1 452 unique records, of which 34 met our inclusion criteria. Twenty-three studies, with an acceptable risk of bias and where PH was diagnosed at right heart catheterisation or echocardiography, were included in the meta-analysis. In post-TB studies (n=14/23), the prevalence of PH was 67.0% (95% CI 50.8 - 81.4) in patients with chronic respiratory failure, 42.4% (95% CI 31.3 - 54.0) in hospitalised or symptomatic patients, and 6.3% (95% CI 2.3 - 11.8) in non-healthcare-seeking outpatients (I^2=96%). There was a lower estimated prevalence of PH in studies of populations with active TB (9.4% (95% CI 6.3 - 13.0); I^2=84%).
Conclusion. Our results highlight the significant burden of PH in post-TB and active TB populations. We emphasise the need for increased recognition of TB-associated PH and additional high-quality prevalence data.

PAEDIATRIC PULMONOLOGY

Pleuropulmonary blastoma: A case report

N Adjetey, J Bangirana, D Smith, P Mwanyika, A Brookes, T Pillay, H de Quintal, D M Gray, A Vanker, M Zampoli
Division of Pulmonology, Department of Paediatrics and Child Health, Red Cross War Memorial Children's Hospital and Faculty of Health Sciences, University of Cape Town, South Africa
Corresponding author: *N Adjetey (naadjeley@ymail.com)*

Background. Pleuropulmonary blastoma (PPB) is a rare and aggressive malignant pulmonary tumour that occurs in children. The clinical presentation can be nonspecific, and the tumour can easily be misdiagnosed as other respiratory tract conditions. We report a case of a 2.5-year-old girl with PPB who presented with acute respiratory distress and wheezing.
Case presentation. A previously well 2.5-year-old girl was brought to hospital with a 3-day duration of cough, difficulty in breathing and intermittent noisy breathing. There had been no preceding fever or coryzal symptoms and no witnessed or reported incidence of choking. Initial management involved inhaled bronchodilators, antibiotics and cough syrup, with little improvement. Chest examination revealed reduced entry on the left with unilateral biphasic wheezing. A chest radiograph showed left lung hyperinflation with attenuation of the left main bronchus. The findings were suspicious for an inhaled foreign body, so flexible bronchoscopy was performed. It revealed a stalked polypoid lesion arising from the left main bronchus, straddling across the carina into the right main bronchus. The tumour was removed by rigid bronchoscopy, and histopathological examination showed rhabdoid elements. Further imaging with a chest computed tomography scan and magnetic resonance imaging of the abdomen showed a single nodular lesion in the left lower lobe and a cystic nephroma in the left kidney, respectively. The patient was diagnosed with type 3 PPB, and adjuvant chemotherapy was initiated with further plans for complete resection of any residual disease after completion of chemotherapy. *DICER1* gene mutation analysis is yet to be carried out.
Conclusion. PBB accounts for <1% of primary malignant lung tumours in children. It is classified into three types, with type 3 being predominantly solid tumours. PPB with cystic nephroma is associated with *DICER1* syndrome, and surveillance is required. Treatment of PBB involves aggressive surgery and chemotherapy; prognosis is poor for type 3. Unexplained and unusual wheezing should always trigger further exploration to uncover the cause.

Antenatal ambient pollution and impulse oscillometry in children from the Mother and Child in the Environment (MACE) birth cohort, Durban, South Africa

K Asharam, P Jeena, R N Naidoo
Discipline of Occupational and Environmental Health, School of Nursing and Public Health, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa
Corresponding author: *K Asharam (ramchar4@ukzn.ac.za)*

Background. Ambient pollutant-related large-airways disorders may arise preclinically through impacts on the distal airways.
Objectives. To determine whether antenatal exposure to ambient pollutants is associated with impulse oscillometry (IOS) measurements in schoolchildren.
Methods. Pregnant women from low-socioeconomic communities in Durban, South Africa, were recruited at public antenatal clinics in their first trimester and followed up until delivery. Newborns were followed up in infancy and annually. To date, 312 children have had IOS, clinical assessments and interviews. Hybrid land-use regression and dispersion modelling provided household-level exposure. Exposure metrics included averages for the pregnancy year, first trimester and birth month for particulate matter 10 and 2.5 microns in diameter (PM10 and PM2.5), nitrogen dioxide (NO2) and sulphur dioxide (SO2).
Results. The median (range) levels of the pollutants (µg/m3) were as follows: NO2: 15.9 (7.54 - 25.9); PM10: 30.5 (3.8 - 57.9); PM2.5: 13.3 (9.02 - 14.1); and SO2: 3.3 (2.1 - 5.8). The mean (standard deviation) age of the children was 7.4 (1.4) years, and 50.3% were female. Features compatible with asthma were present in 13.8%. The median (interquartile range) IOS measurements (cm H2O/L) were: Rx5-20: 2.5 (–2.8 - 7.4); Ax: 41.6 (0.9 - 114.6); X5 z-score: 0.65 (–3.9 - 4.3); and R5 z-score: 0.27 (–2.3 - 2.9). Although showing an increase in resistance and a decline in reactance, pollutant metrics did not generally reach statistical significance, except for annual SO2 (with X5 z-score) and annual PM10 and PM2.5 (with frequency response).
Conclusion. Preliminary findings suggest that associations between air pollution and responses of the distal airways in children may be present.

Epithelioid malignant peripheral nerve sheath tumour of the trachea in an adolescent male: A case report

J Bangirana, K Grebe, N Adjetey, P Mwanyika, D Smith, A Brooks, S Singh, T Pillay, H J Zar, M Zampoli, A Vanker, D M Gray
Division of Pulmonology, Department of Paediatrics and Child Health, Red Cross War Memorial Children's Hospital, Cape Town, South Africa
Corresponding author: *J Bangirana (bangiranaj@yahoo.com)*

Background. Epithelioid peripheral nerve sheath tumours are aggressive malignant tumours that uncommonly occur in the trachea. Patients usually present with wheezing and cough, and so can easily be mistaken as having asthma. There are no reported cases in children.

Case presentation. An 11-year-old boy presented with a 4-week history of intermittent wheezing, without prior foreign body aspiration or asthma. He had severe respiratory distress, and initially seemed to respond to inhaled bronchodilators and corticosteroids, including intravenous pulse methylprednisolone, although with only short-term relief. Lung function testing showed a mixed picture of obstructive-restrictive disease. A computed tomography (CT) scan of the chest revealed a mass in the distal trachea. Bronchoscopy revealed a fleshy lobulated mass in the distal trachea, occluding >80% of the trachea, and histological examination of a biopsy specimen showed features of an epithelioid peripheral nerve sheath tumour. He underwent complete surgical resection of the tumour mass, including the surrounding margins, with minimal postoperative complications. Repeat bronchoscopy 6 weeks after surgical resection showed no recurrence of the mass, and the results of spirometry were normal. He has completed radiotherapy with no adverse effects and will have surveillance bronchoscopy 6-monthly.
Conclusion. Primary tracheal tumours should be considered in the differential diagnosis when a child presents with persistent wheezing, especially if unresponsive to the typical treatment for asthma. A chest CT scan and bronchoscopy are important diagnostic modalities in these patients. Complete surgical resection of tracheal tumours may lead to complete resolution of symptoms.

A classification model to identify severe paediatric lymphobronchial tuberculosis with a focus on airway obstruction

M Basson, J Grobler, P Goussard

Department of Industrial Engineering, Faculty of Engineering, Stellenbosch University, South Africa

Corresponding author: *M Basson (basson.marthinus@gmail.com)*

Background. Lymphadenopathy is an indicator of severe tuberculosis (TB) in children. Use of chest X-rays (CXRs) to detect lymphadenopathy by trained physicians yielded a moderate sensitivity of 67 - 74% and a specificity of 39 - 59%. The diagnosis of pulmonary TB in children aged <5 years is difficult, as the symptoms mimic those of several childhood illnesses, while studies show that advanced diagnostic methods have failed to distinguish between TB and other conditions in this age group.
Objectives. To improve the sensitivity and specificity of the currently available methods used to identify TB in children.
Methods. A method to automatically identify pulmonary TB with severe lymphadenopathy in children aged <5 years using computer vision advancements was developed. Four deep-learning classification modules were created for evaluation. The airway was segmented on the CXR images to focus on the effects of TB lymphadenopathy on the airway.
Results. Three models were created that outperformed the base model sensitivity and specificity by 25 - 30 percentage points. The best-performing model, the custom ResNet50 model, achieved a statistically significant sensitivity of 94.43% (95% confidence interval (CI) 92.11 - 97.47) and specificity of 94.79% (95% CI 91.645 - 97.22). The results show that using the segmented airway to detect TB lymphadenopathy is possible based on airway deformation and compression.
Conclusion. A machine-learning model that can predict severe pulmonary TB in children aged <5 years with only a few CXR images was produced, which shows significant improvements compared with manual diagnostic methods.

The prevalence of bronchiectasis in South African children with postinfectious bronchiolitis: A retrospective observational study

C Jacobs, A Gie, C le Roux, M M van der Zalm, N Parker, E Eber, P Goussard

Department of Paediatrics and Child Health, Faculty of Medicine and Health Sciences, Stellenbosch University, Cape Town, South Africa

Corresponding author: *P Goussard (pgouss@sun.ac.za)*

Background. Postinfectious bronchiolitis obliterans (PIBO) occurs following severe respiratory infection. PIBO results in small-airway injury and bronchiectasis, leading to prolonged respiratory sequelae. It is unclear which children are at risk of PIBO and PIBO-associated bronchiectasis.
Methods. This retrospective study performed at a South African tertiary hospital identified all cases of PIBO between 1 January 2016 and 31 December 2022. Electronic medical and radiological records were examined, and data on clinical characteristics, prior hospital admissions for respiratory infections and chest computed tomography (CT) findings were collected. The clinical and radiological characteristics of cases with and without bronchiectasis were compared.
Results. Fifty-nine children with PIBO were included. The median (interquartile range) age at diagnosis was 16 (11 - 28) months, the median age at primary lung insult 10 (6 - 17) months, and the median interval between insult and diagnosis 4 (2 - 9) months. At initial lung insult, mechanical ventilation was required in 19 children (32.2%), with 9 requiring high-frequency oscillation ventilation. Twenty-three children (39.0%) had comorbidities, of which the most common were premature birth (n=18; 30.5%) and HIV infection (n=4; 6.8%). Adenovirus was the leading pathogen, identified in 41 cases (69.5%). Chest CT scans demonstrated mosaic attenuation in all cases, with 33 children (55.9%) having bronchiectasis (unilateral n=17 (51.5%), bilateral n=16 (48.5%)). There was no difference in clinical characteristics, ventilation, causative pathogens or comorbidities between children with and without bronchiectasis.
Conclusion. A significant proportion of children with PIBO have bronchiectasis present within 4 months of the initial respiratory insult. Premature birth is a common comorbidity and may contribute to the development of PIBO.

Fractional exhaled nitric oxide expression from infancy to childhood in South African children

C Jacobs, S Chaya, N Marozva, M Botha, A Vanker, A Custovic, H J Zar, D M Gray

Department of Paediatrics and Child Health, Red Cross War Memorial Children's Hospital and MRC Unit on Child and Adolescent Health, University of Cape Town, South Africa

Corresponding author: *C Jacobs (carvern.jacobs@uct.ac.za)*

Background. Fractional exhaled nitric oxide (FeNO) is a marker of respiratory eosinophilic airway inflammation. There are limited data on FeNO expression in early life, particularly in low- to middle-income settings.
Objectives. To assess FeNO expression from infancy through to childhood in the Drakenstein Child Health Study, an African birth cohort.
Methods. FeNO testing was performed during sleep at 6 weeks and 1 and 2 years, and with the child awake at 8 years. Exposures were longitudinally collected. Statistical analysis included Mann-Whitney rank-sum and Kruskal-Wallis tests and logistic regression.
Results. Of the 1 143 enrolled children, 910 (79.6%) had successful FeNO testing at 6 weeks and 486 (42.5%) at 8 years. Lower household income (median (interquartile range) 8 (3.95 - 13.6) parts per billion (ppb) v. 11 (6.4,15.1) ppb; p=0.008) and preterm birth (5.40 (2.44 - 9.31) ppb v. 6.99 (4.31 - 12.36) ppb; p=0.012) were associated with lower FeNO at 6 weeks. Postnatal maternal smoke exposure (5.98 (3.81 - 10.38) ppb v. 7.73 (4.38 - 13.4) ppb; p=0.022) and household smoking (6.42 (3.96 - 11.14) ppb v. 9.23 (5.13 - 16.40) ppb; p=0.01) were associated with reduced FeNO at 8 years. Maternal atopy was not associated with child FeNO. Children born preterm and in winter were more likely to be in the lowest FeNO quartile at 8 years (preterm: odds ratio (OR) 1.89; 95% confidence interval (CI) 1.05 - 3.4; p=0.03; winter: OR 1.73; 95% CI 1.01 - 3.18; p=0.05) compared with children born at term and during summer. Smoke-exposed children were less likely to have high FeNO compared with unexposed children (antenatal smoke exposure: OR 0.59; 95% CI 0.36 - 0.95; p=0.03; postnatal household smoking: OR 0.58; 95% CI 0.36 - 0.9; p=0.02).
Conclusion. FeNO at birth tracks through to school age and is influenced by season of birth, environmental tobacco smoke and socioeconomic status.
Funding. The study received funding from the Bill and Melinda Gates Foundation (grant nos OPP1017641 and OPP1017579); the National Institutes of Health, USA (H3 Africa grants U54HG009824 and U01AI110466); the Wellcome Trust (098479/Z/12/Z, 204755/Z/162); the Medical Research Council, South Africa (SA); the National Research Foundation, SA; and Harry Crossley Clinical Research.

Bronchiectasis in children in a high HIV and TB prevalence setting

P Juggernath, K Mopeli, R Masekela, Z Dangor, A Goga, D M Gray, C Verwey
Department of Paediatrics and Child Health, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa
Corresponding author: *P Juggernath (pearlinejuggy@gmail.com)*

Background. Bronchiectasis is a largely neglected disease, especially in low- to middle-income countries (LMICs). Post-infectious causes are more common in LMICs, while in high-income countries, inborn errors of immunity, recurrent aspiration, primary ciliary dyskinesia (PCD) and cystic fibrosis are more common. Children living with HIV (CLWH), especially those who are untreated, are at increased risk of bronchiectasis.
Objectives. To describe the demographics, medical history, aetiology and clinical characteristics of children with bronchiectasis, and the results of special investigations, and compare these according to HIV status.
Methods. This was a retrospective descriptive study of children aged <16 years of age with chest computed tomography (CT) scan-confirmed bronchiectasis in Johannesburg over a 10-year period. Data were collected from the paediatric pulmonology database at Chris Hani Baragwanath Academic Hospital.
Results. Ninety-one participants (51% male, 98% black African, median (interquartile range) age 7 (3 - 12) years) were included. Compared with HIV-negative children, CLWH were older at presentation (median 10 (6 - 13) years v. 4 (3 - 9) years; p<0.01), and more likely to be stunted (p<0.01), to have clubbing (p<0.01) and hepatosplenomegaly (p=0.03), and to have evidence of multilobar involvement on the chest CT scan (p<0.01). All the children had a cause identified; the majority (86%) of these were presumed to be post-infectious, based on a previous history of a severe lower respiratory tract infection. This group included all 38 CLWH. Only a small proportion of the children had inborn errors of immunity, secondary immune deficiencies or PCD.
Conclusion. A post-infectious cause for bronchiectasis was the most common aetiology described in children from an LMIC in Africa, especially in CLWH. With improved access to diagnostic techniques, the aetiology of bronchiectasis in LMICs is likely to change.

Comparative analysis of oscillometry and spirometry trajectories in lung function assessment

N Marozva, S Chaya, C Jacobs, K Brittain, M Botha, Z Hantos, A Custovic, H J Zar, D M Gray
Department of Paediatrics and Child Health, Red Cross War Memorial Children's Hospital and MRC Unit on Child and Adolescent Health, University of Cape Town, South Africa
Corresponding author: *N Marozva (nicola.marozva@uct.ac.za)*

Background. Tracking the trajectories of lung function over time is important for understanding lung function maturation, enabling us to monitor respiratory health, implement timely interventions and identify strategies to optimise respiratory health in early life. Spirometry trajectories have been described from childhood to adulthood. Given the importance of lung health in early life, more recently early-life trajectories have been described using oscillometry. It is not yet understood how these early-life trajectories relate to established spirometry trajectories.
Objectives. To describe tracking of oscillometry measures from 6 weeks to 10 years of age and how they relate to longitudinal (5 - 10 years) spirometry results in an African population-based cohort.
Methods. Lung function was measured from 6 weeks and annually to 10 years of age. Summary statistics and trajectory plots were generated to describe trajectories of oscillometry (compliance (C) and resistance (R) of the respiratory system) and forced spirometry (forced expiratory volume in the 1st second (FEV_1) and forced vital capacity (FVC)). Lung function quartiles determined at 6 weeks and 3 years for C and R were tracked over the first 10 years of life. The relationship between C and R and subsequent spirometry measures (FEV_1 and FVC) was analysed.
Results. C trajectories remained consistent across quartiles, with children in the highest quartile maintaining highest values of C through to 10 years. R quartiles were more variable over time, with only the lowest quartile tracking consistently to 10 years. However, when tracked from 3 years of age, they remained consistent across quartiles. Children in the highest C trajectory had higher spirometry values and lower R,

and children in the highest R trajectories, determined at 3 years, had consistently low spirometry values from 5 to 10 years of life.

Conclusion. These results suggest a correlation between early-life oscillometry measures and subsequent spirometry values. The consistency observed in the C and R trajectories highlights the importance of early detection and monitoring to identify children at risk for respiratory issues and to implement early interventions. The study demonstrates that it is possible to track lung function along the life course from early life, thereby enhancing our understanding of respiratory health trajectories and the implications for early intervention strategies.

Funding. The study received funding from the Bill and Melinda Gates Foundation (grant nos OPP1017641 and OPP1017579); the National Institutes of Health, USA (H3 Africa grants U54HG009824 and U01AI110466); the Wellcome Trust (098479/Z/12/Z, 204755/Z/162); the Medical Research Council, South Africa (SA); the National Research Foundation, SA; a Hungarian Scientific Research Fund grant (K 128701); the European Respiratory Society (INCIRCLE CRC-2013-02); and Harry Crossley Clinical Research.

Aetiology and outcome of pleural empyema in children admitted to Pietersburg Hospital Limpopo, South Africa

M Tshamiswe, G Tiva

Paediatric Pulmonology Unit, School of Medicine, Faculty of Health Sciences, University of Limpopo, Polokwane, South Africa

Corresponding author: *M Tshamiswe (mbilaelot@gmail.com)*

Background. Pleural empyema in children is associated with high morbidity and high mortality. Incidence of pleural empyema in children appears to have improved in developed countries such as the US and UK, with an annual incidence of ~3 per 100 000 children. *Staphylococcus aureus* (*S. aureus)* has been shown to be the most common in developing countries. In South Africa, *S. aureus* has also been identified as the leading causative organism in a study performed at the Chris Hani Baragwanath Hospital, Johannesburg.

Objectives. To determine the causative organisms of pleural empyema, the treatment outcomes, and the relationship between pleural empyema, TB and HIV infection.

Methods. This was a retrospective quantitative descriptive study of children admitted to Pietersburg Hospital, Polokwane, with pleural empyema during January 2016 - December 2020. A self-generated data collection tool was used to obtain secondary data of all patients that met the operational definition of pleural empyema. Data that addressed the objectives of the study were extracted.

Results. Descriptive statistic methods were used to analyse the data. Of the 11 patients included in the study, 4 (36%) had their pleural fluid cultured. *S. Aureus* was the leading cause of pleural empyema followed by *Streptococcus Pneumonia* (n=1, 9%). Three (27%)of the patients died, two (18%) were lost to follow-up and six (55%) were discharged to other facilities.

Conclusion. The results show *S. Aureus* as the leading cause of pleural empyema in Limpopo, in line with the results of studies in the Western Cape (Red Cross War Memorial Children's Hospital) and Gauteng (Chris Hani Baragwanath Hospital). Intercostal drainage and VATS were performed in 91% of the patients. Due to the small sample size however, there was no statistical significance in the correlation between pleural empyema, HIV and TB. Immunisation status was not documented in clinical records which made it difficult to correlate with pleural empyema.

Chronic cough not improving with antituberculosis treatment: A case report

S F Mokati, S A Thula, R Masekela

Department of Paediatrics and Child Health, Nelson R Mandela School of Medicine, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa

Corresponding author: *S F Mokati (msizakele@yahoo.com)*

Background. *Aspergillus fumigatus* is an opportunistic mould found in the environment. It can cause a spectrum of clinical manifestations depending on host's immune status. In an immunocompromised host, it can cause invasive pulmonary aspergillosis (IPA).

Case presentation. A 7-year-old girl presented with a 1-year history of productive cough associated with fever and weight loss. She was started on antituberculosis treatment with isoniazid/rifampicin, pyrazinamide and ethambutol by the base hospital on the basis of chest radiographic findings (Fig. 1). All sputa were negative for tuberculosis (TB), and she was HIV negative. The findings on clinical examination were nonspecific. She had significant weight loss, digital clubbing and mild respiratory distress with continued oxygen dependence. The erythrocyte sedimentation rate was 127 mm/h. She was treated for pulmonary TB with minimal clinical response. A chest computed tomography scan (Fig. 2) revealed multiple nodules with hilar lymphadenopathy. Bronchoscopy showed a narrow right main

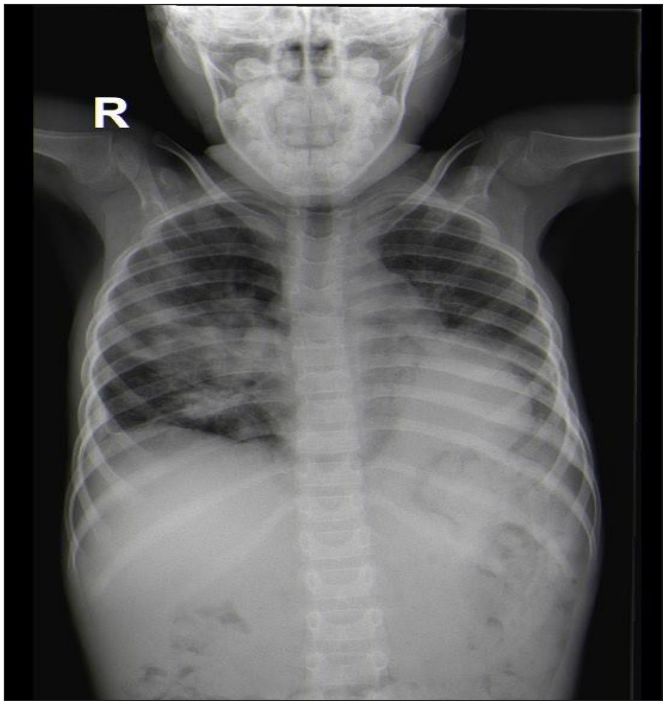

Fig. 1. Chest radiograph (anteroposterior view) showing splayed carina, infiltrates in the right middle lobe, and a confluent opacification in the lingular region.

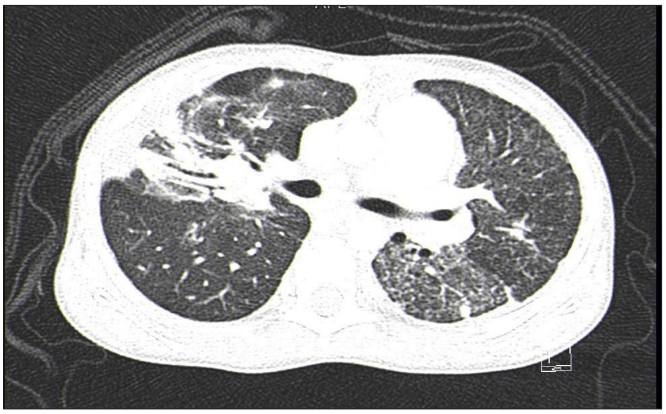

Fig. 2. Chest computed tomography scan showing bilateral lymphadenopathy.

bronchus, and bronchoalveolar lavage cultured *A. fumigatus*. Treatment with voriconazole was initiated with good response.

Conclusion. IPA remains difficult to diagnose and treat. It is commonly seen in immunocompromised individuals. Early investigations and treatment are crucial to prevent complications. Voriconazole is the new gold standard for the treatment of IPA, with a minimum duration of 12 weeks. Our case underscores the critical significance of early recognition and intervention. The complex diagnostic challenge highlights the need for a multidisciplinary approach.

Effect of respiratory syncytial virus and SARS-CoV-2 co-infection on clinical severity and outcomes among children hospitalised with lower respiratory tract infections in Soweto, South Africa

K-L Mrubata, V Bailie, F Solomon, A Izu, M Ncube, M C Nunes, Z Dangor, S A Madhi, D P Moore, C Verwey

Department of Paediatrics and Child Health, School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa

Corresponding author: *K-L Mrubata (kitsomrubata@gmail.com)*

Background. There are few data available on the interplay between and clinical manifestations of respiratory syncytial virus (RSV) and SARS-CoV-2 infection in African children. We compared clinical characteristics and outcomes between RSV-only, SARS-CoV-2-only, and RSV/SARS-CoV-2 co-infection lower respiratory tract infections (LRTIs) in hospitalised African children.

Methods. This was a retrospective review of children (0 - 59 months) hospitalised with severe LRTI in Johannesburg, South Africa, between 1 January 2020 and 31 March 2023. Clinical data and nasopharyngeal swabs for respiratory viruses were collected, and clinical characteristics and outcomes were described and compared. Respiratory Index of Severity in Children (RISC) scores were calculated for HIV-uninfected children, and covariates associated with high RISC scores (≥5) were evaluated using Poisson regression models.

Results. Of 7 456 children enrolled (median (interquartile range) age 6.1 (14.4 - 18.6) months, 57.7% male), 1 372 (18.4%) tested RSV+/SARS-CoV-2– (RSV only), 223 (3.0%) RSV–/SARS-CoV-2+ (SARS-CoV-2 only), and 28 (0.4%) RSV+/SARS-CoV-2+ (RSV/SARS-CoV-2 co-infection). Children with RSV only and RSV/SARS-CoV-2 co-infection were more likely to present with bronchiolitis than those with SARS-CoV-2 only (673/1 372 and 15/28 v. 46/223; p<0.001). Children with RSV/SARS-CoV-2 co-infection had more severe disease than those with RSV or SARS-CoV-2 only, as well as a higher RISC score than those with SARS-CoV-2 only. In multivariable Poisson regression models, weight-for-age z-scores (adjusted risk ratio (aRR) 0.92), room air saturations (aRR 0.988) and RSV-positive status (aRR 1.40) were independently associated with severe disease.

Conclusion. Although both RSV and SARS-CoV-2 LRTI occurred commonly, co-infection with RSV/SARS-CoV-2 did not. Children with RSV/SARS-CoV-2 co-infection had a higher prevalence of severe disease than those with RSV or SARS-CoV-2 only. These findings reinforce the urgent need for safe and effective RSV vaccines.

Right lung agenesis: A case report

P Mwanyika, J Bangirana, N Adjetey, D Smith, T Pillay, H J Zar, D M Gray, A Vanker, M Zampoli

Division of Pulmonology, Department of Paediatrics and Child Health, Red Cross War Memorial Children's Hospital, Cape Town, South Africa

Corresponding author: *P Mwanyika (pmwanyika@yahoo.co.uk)*

Background. Unilateral lung agenesis is a rare congenital abnormality. Right lung agenesis is the less common form, and may have a poorer prognosis owing to severity of coexisting anomalies. We present a case of an infant with right lung agenesis.

Case presentation. A 3-month-old girl, previously well, was brought to hospital with a cough, a runny nose and fast breathing for the past 2 days. She had been born by normal delivery at term with no perinatal complications. Physical examination revealed tachypnoea with nasal flaring, head bobbing, and subcostal and intercostal retractions. The right hemithorax was dull to percussion with reduced breath sounds on auscultation on the right soft wheezes. The point of maximal impulse was felt on the third intercostal space right midclavicular line. First and second heart sounds were heard normally with no murmur. There were no other relevant findings. The results of relevant investigations were as follows: nasopharyngeal aspirates negative, full blood count within normal ranges, and C-reactive protein 2 mg/L. A chest radiograph showed asymmetrical lung volume with homogeneous opacity on the right hemithorax. Chest computed tomography angiography revealed absence of the right lung and pulmonary artery with attenuation of the trachea and left main bronchus. Supportive management was provided, and the infant was discharged in an improved condition.

Conclusion. Lung agenesis can be incidentally diagnosed later in life when complicated by pulmonary infection, which we suspect was the case in our patient. The differential diagnosis includes lung atelectasis or congenital overinflation of the ipsilateral lung or one of its lobes. Management is mainly supportive, with close follow-up and prevention and early treatment of pulmonary infections. The prognosis depends on other associated congenital anomalies.

The cost-effectiveness of anti-inflammatory reliever therapy "AIR" or maintenance and reliever therapy "MART" for mild to moderate asthma: A systematic review

N Ndimande, K Mortimer, M Stolbrink, J Mbonigaba, R Masekela

Department of Paediatrics and Child Health, School of Clinical Medicine, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa

Corresponding author: *N Ndimande (ondimanden2@ukzn.ac.za)*

Background. Asthma is a common respiratory disease estimated to affect ~262 million people globally. Anti-inflammatory reliever therapy (AIR) and maintenance and reliever therapy (MART) are now standard of care in many countries for treating mild to moderate asthma in adolescents and adults, but little is known about the cost-effectiveness of these approaches.
Objectives. To assess the cost-effectiveness of AIR and MART.
Methods. A systematic literature review of results from randomised controlled trials, non-randomised controlled trials, modelling, and comparative-observational studies was conducted. Four databases were searched to identify articles from any country from 2013 to 2023. Recording and reporting of results was done using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines.
Results. A total of 8 articles were included, involving 10 179 people. Most were model based, with 6 studies using Markov modelling and 1 decision analytical modelling, and only 1 being a retrospective matched observational study. Half the studies were conducted in high-income countries v. low- to middle-income countries (none in Africa). AIR was assessed as cost-effective v. inhaled corticosteroids (ICS), short-acting beta-agonists (SABA) and ICS-SABA for both payer and society, as it improved exacerbation rates and quality-adjusted life-years (QALY) while saving costs or increasing costs within acceptable thresholds. MART was cost-effective v. ICS-SABA and ICS-LABA, as it was cheaper while improving exacerbation rates and QALY.
Conclusion. AIR and MART are cost-effective approaches for the treatment of mild to moderate asthma. We found no cost-effectiveness data for AIR or MART for treating asthma in the unique and diverse conditions seen in Africa, highlighting an important evidence gap that must be filled to inform African policy and decision-makers.

Disseminated cryptococcosis in an immunocompetent child: A case report

S L Ngaka, A S Thula, R Masekela
Department of Paediatrics and Child Health, Nelson R Mandela School of Medicine, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa
Corresponding author: *S L Ngaka (sanelisiwengaka@gmail.com)*

Background. *Cryptococcus* species predominantly causes significant infections in immunocompromised individuals, particularly those with HIV infection. Over the past few decades, infections with these rare pathogens have become more common in immunocompetent individuals, especially children.
Case presentation. We report a case of disseminated cryptococcosis with soft-tissue, pulmonary and cerebral involvement in an otherwise healthy immunocompetent patient. Radiological imaging revealed an intrathoracic mass with posterior thoracic wall extension and features in keeping with leptomeningitis. The diagnosis was confirmed on cerebrospinal fluid analysis and histopathological examination of the posterior thoracic wall mass.
Conclusion. The morbidity and mortality associated with cryptococcosis would be significantly reduced with early recognition, diagnosis and appropriate treatment.

Pulmonary function testing in healthy infants in rural Bangladesh: Feasibility study

C Verwey, G K Sojib, S Islam, A D Roy, A Islam, D Czovek, G Makan, S Ahmed, A H Baqui, Z Hantos, E D McCollum
School of Clinical Medicine, Faculty of Health Sciences, University of the Witwatersrand, Johannesburg, South Africa; South African Medical Research Council Vaccines and Infectious Diseases Analytics Research Unit, Johannesburg, South Africa
Corresponding author: *C Verwey (charl.verwey@wits.ac.za)*

Background. Despite a high respiratory disease burden, infant pulmonary function testing (iPFT) in low- and middle-income countries is limited.
Objectives. To establish an iPFT laboratory in a rural area of Bangladesh.
Methods. A cohort in rural Sylhet, Bangladesh, included pregnant women and their offspring followed through 6 months. Experts established an iPFT laboratory and trained study staff. Infants were eligible for respiratory oscillometry (Osc), tidal breath flow-volume loops (TBFVL) and sulphur hexafluoride (SF_6) multiple breath washout (MBW) at 2 and 6 months of age, from November 2021 until October 2022, during natural sleep. Measurement average and dispersion were summarised, and the mean measurement difference between study staff and expert analyses was calculated.
Results. Oscillometry and TBFVL/MBW were implemented in sequential phases. The first 25 measurements for Osc (mean (standard deviation) 116.6 (56.5) days; 52% (n=13/25) male) and TBFVL/MBW (mean 84.2 (8.8) days; 48% (n=12/25) male) were analysed. Acceptable tests were achieved in 88% (n=22/25) for Osc, 100% (n=25/25) for TBFVL, and 88% (n=21/24) for MBW. Resistance at 7 Hz was 66.3 (25.2) and 64.0 (22.4) hPa.s/L^{-1} at 2 and 6 months. At 2 months the mean respiratory rate was 41.1 (7.1) breaths/minute, tidal volume/kg 7.5 (1.3) mL, functional residual capacity 83.6 (19.0) mL, and lung clearance index 7.2 (1.0). The differences between study staff and expert analyses were minimal across all measurements.
Conclusion. Establishing an iPFT laboratory, performing quality measurements, and conducting expert-level analysis in rural Bangladesh is feasible.

Outcomes of children admitted to a paediatric intensive care unit with adenovirus pneumonia: A single-centre study

S Maleni, R Masekela
Department of Paediatrics and Child Health, School of Clinical Medicine, College of Health Sciences, University of KwaZulu-Natal, Durban, South Africa
Corresponding author: *S Maleni (malenistella@yahoo.com)*

Background. Pneumonia is the leading cause of death in children aged <5 years. Pneumonia in early life can impair long-term lung health by decreasing lung function. Adenovirus pneumonia causes significant morbidity and mortality, with up to 30% of children developing complications such as bronchiolitis obliterans and bronchiectasis.
Objectives. To determine the short-term outcomes of children with adenovirus pneumonia admitted to the paediatric intensive care unit at Inkosi Albert Luthuli Central Hospital, Durban.

Methods. A retrospective review of medical records of children aged <5 years admitted to the paediatric intensive care unit with polymerase chain reaction-confirmed viral pneumonia between July 2017 and July 2022. Data will be analysed using SPSS Version 25. Factors significant will be subjected to binary logistical regression and the results expressed as odds ratios.