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ABSTRACT BOOK

Oral Presentations

Barriers to Accessing Successful Treatment of TB Infection Among Male Adolescents and Young Adults: A Political Economy Analysis in Kenya

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Introduction
Tuberculosis (TB) is a serious public health issue in Kenya. In 2016, the WHO estimated there were 169,000 cases of TB in Kenya and 29,000 deaths (excluding deaths linked to HIV and TB coinfection), making TB the fourth-leading cause of death in the country, with the highest cases being reported in men (WHO, 2016). However, little is known on the incidence among Kenyan male adolescents and young adults and the barriers to access successful treatment of TB infection. The study, therefore, conducted a problem-driven political economy analysis to understand the barriers.

Methods
In Nov 2022, key informant interviews (n= 16) were conducted in Kenya with purposively selected participants based on their position, knowledge of, and involvement in health policy formulation, dissemination, and implementation. The study utilized a framework analysis approach to analyze the data.

Results
The study found that most Kenyans, including males, focus on food and daily sustenance rather than healthcare since it has reached a point where it is a question of life or death. With up to 49% of TB patients suffering from malnutrition, it has become one of the most severe co-morbidities. Among the 13000 healthcare establishments in the country, only 6000 of them treat TB patients. Out of those 6000, only 300 provide TB diagnosis services. The few facilities, worse in Arid and Semi-Arid Land (ASAL) areas, are only open Monday through Friday from 8 AM to 5 PM, limiting casual laborers who only get permission during weekends. Even though TB primarily affects males more than women, some implementing partners and institutions offer service delivery based on gender limiting access among men for service delivery. Another barrier to access is the stigma surrounding tuberculosis which is hampering efforts to discover the missing cases. Some communities still believe that TB is genetically inherited, a curse, associated with witchcraft, and TB patients are automatically HIV positive.

Conclusion
In conclusion, even though TB service providers have started attracting specialized personnel like social scientists and health economics for health systems, much needs to be done to ensure the findings are implemented accordingly.

Characteristics and phenotypes of a COPD patient cohort in Uganda

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Introduction
Chronic Obstructive Pulmonary Disease (COPD) is a heterogeneous disease with varied clinical and pathophysiologic characteristics. Although there is increasing evidence that COPD in low- and middle-income countries may have a different phenotype from that in high income countries, little is known about the COPD patient phenotype in these settings. We describe the clinical characteristics and risk factor profile of a COPD population in Uganda.

Methods
We cross sectionally analyzed the baseline clinical characteristics of 323 COPD patients aged 30 years and above who were attending two national referral outpatient facilities in Kampala, Uganda between July 2019 and March 2021. Logistic regression was used to determine factors associated with spirometric disease severity defined according to GOLD stage (I & II vs III & IV).

Results
The median age was 62 years; 51.1% females; 93.5% scored CAT >10; 63.8% mMRC >2; 71.8% had wheezing; 16.7% were HIV positive; 20.4% had a history of pulmonary tuberculosis, 48.0% had a history of biomass smoke exposure, and 50% had and eosinophilic count >3%. 51.7% had a history of 3 or more exacerbations in the past year. Severity by GOLD stage was inversely related to older age, (aOR=0.95, 95%CI=0.92, 0.97), and obesity compared to underweight (aOR=0.25, 95%CI=0.07, 0.82).In regard to clinical factors, more severe COPD was associated with SPO2<93% (aOR=3.79, 95%CI=2.05, 7.00), mMMRC≥2 (aOR=2.21, 95%CI=1.08, 4.53), and a history of severe exacerbations (aOR=2.64, 95%CI=1.32, 5.26).

Conclusion
COPD patients in this population had specific risk factor profiles and characteristics including HIV, history of TB and biomass smoke exposure, meriting tailored preventative approaches. Severe disease was associated with low SPO2, history of severe exacerbations and high mMRC. Further studies are needed to better understand the pathophysiological mechanisms at play and the therapeutic implications of these findings

Implementing Of Active Case Finding Model The Case Of Oruba Nursing And Maternity Private Facility

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Introduction

Active case finding is a systematic identification of presumptive TB cases from a predetermined target group or population. In 2021, Oruba nursing and maternity reported a drop in TB cases notified by 19.4%. This was due to knowledge gaps amongst clinicians on active case finding, poor laboratory staff attitude towards microscopy, persistent low access to gene expert due to commodity shortage a, poor contact management of bacteriologically confirmed cases and weak community facility linkage due to lack of community health volunteer's knowledge on contact tracing.

Objectives

To increase number of TB cases diagnosed by 20%by December 2022

Methodology

This is a retrospective study comparing data collected from the facility TB patient register from 2020 before full implementation of active case finding at the facility and 2022 during strict implementation of the above intervention. The number of TB cases notified was analyzed per year.

Strategies employed were:
1. Two CME's to sensitize facility staffs on active case finding to promote use of sputum analysis and use of contact management register.
2. Sensitizing three community health volunteers on screening, contact tracing and community facility referrals of suspects.
3. Formation of active case finding committee.
4. Strengthening use of sputum microscopy through on job training (2 sessions)
5. Attaching a linkage assistant to help in screening for TB
6. Monthly data review meetings.

Results

In 2020 the facility notified 36 cases i.e. 31(86%) bacteriologically confirmed and 5(14%) clinically diagnosed TB cases
In 2021 the facility experienced a drop in Tb cases to 29 i.e. 25(86%) bacteriologically confirmed and 4 (14%) clinically diagnosed TB cases.
In 2022 after the above interventions the facility experienced an increase in the number of TB cases notified to 47 (62%) cases i.e. 33 (70%) bacteriologically confirmed and 14(30%) clinically diagnosed TB cases

Conclusion

With support private facilities can implement active case finding and contact tracing in facilities as a means to increase TB cases diagnosed

Multiple overlapping risk factors for childhood wheeze among children in Benin

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Introduction
The African continent is currently facing an epidemiological transition characterized by a shift from communicable to non-communicable diseases including allergies and asthma. In that context, wheeze has multiple potential contributory factors that could include some of the endemic helminth infections, as well as environmental exposures, such as household air pollution. We sought to determine the relative importance of these risk factors among children in Benin.

Methods
We included 964 children aged 6–14 years living in the commune of Comé, south–west Benin. All children were participants in the longitudinal monitoring cohort of the DeWorm3 trial designed to evaluate multiple rounds of community mass treatment with albendazole for interruption of the transmission of soil transmitted helminths (STH). We used multivariate statistical modelling, controlling for covariates, to investigate associations between wheeze and exposure to household air pollution and to other potential allergy-inducing factors, dietary intake and anthropometry, and STH infection status assessed at the pretreatment baseline timepoint,

Results
The prevalence of wheezing history was 5.2%, of current wheezing was 4.6% and of severe wheezing was 3.1%, while STH infections were found in 5.6% of children. These profiles did not vary as a function of either age or gender. Infection with Ascaris lumbricoides, but not hookworm species, was signifcantly associated with both current wheeze (adjusted Odds Ratio (aOR)=4.3; 95% CI [1.5–12.0]) and severe wheeze (aOR=9.2; 95% CI [3.1–27.8]). Signifcant positive associations with current wheeze, independent of each other and of STH infection status, were also found for (i) use of open cookstoves (aOR=3.9; 95% CI [1.3–11.5]), (ii) use of palm cakes for fre lighting (aOR=3.4; 95% CI [1.1–9.9]), (iii) contact with domestic animals and/or rodents (aOR=2.5; 95% CI [1.1–6.0]), (iv) being overweight (aOR=9.7; 95% CI [1.7–55.9]).

Conclusion
Children infected with A. lumbricoides appear to be at elevated risk of wheeze. Deworming may be an important intervention to reduce these symptoms. Improving cooking methods to reduce household air pollution, modifying dietary habits to avoid overweight, and keeping animals out of the house are all additional measures that could also contribute to reducing childrens' risk of wheeze.

Assessment of Inhaler Technique Demonstration among Healthcare Workers in Port Harcourt, Nigeria

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Introduction
Pressurized metered dose inhalers (pMDIs) are the bedrock of asthma management. The effectiveness of the pMDI is dependent on proper use. Studies have shown that about 90% of asthmatics have poor inhaler technique, as a result, healthcare professionals must know and teach proper pMDI technique as a key tool to improving asthma outcomes. This study sought to assess inhaler technique instructions given by healthcare workers to patients with asthma.

Methods
This study was carried out among doctors, nurses, and pharmacists who attended a workshop on asthma care training in Port Harcourt, Nigeria, using an interviewer-administered questionnaire that assessed stepwise instructions and demonstrations given by healthcare workers on how to use a pMDI.

Results
Majority of the respondents where doctors 43(71.7%), while nurses and pharmacists comprised 14(23.3%) and 3(5%) respectively. There were more female health workers (F: M = 1.7:1). Most healthcare workers had been practicing for at least 10 years 40(66.7%), knew what a pMDI was 59(98.3%); about two-third 38(63.3%) had instructed a patient on how to use a PMDI. One respondent, a doctor, that had been practicing for 10 - <15yrs, did not know what a pMDI was.
An average of 34.3±20.1% of the instructions in assessing inhaler technique were correctly given by the respondents. Most of the health workers 59(98.3%) correctly demonstrated the first step in using an inhaler, which is taking off the cap and holding the canister upright. The steps that were less frequently communicated were, the correct position of the head, to tilt it slightly backward 8(13.3%), followed by, emptying the lungs by exhaling before taking a puff 9(15.0%) and holding the breath for at least 5- 10seconds after removing the canister from the mouth 10(16.7%).

Conclusion
The quality of instructions and demonstrations given by healthcare workers for pMDI use is suboptimal. This would directly lead to poor inhaler techniques in patients and poor asthma outcomes. With the call to close the gap in asthma care, especially in low-middle- income countries, there is a need to train healthcare workers on proper inhaler techniques, to enable them teach their patients and improve asthma management outcomes.

Preterm birth, birth weight, infant weight gain and their associations with childhood asthma and lung function: a study in Kenya

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Introduction
In sub-Saharan Africa, there is a high prevalence of asthma and high rates of obstructive and restrictive lung function deficits. In high income countries, associations between early life parameters and childhood asthma and lung function have played important roles in highlighting the importance of early life factors in the aetiology of asthma and lung function life course. In sub-Saharan Africa a few studies have provided fragmentary, contradictory results. We present here the most comprehensive investigation to date in sub-Saharan Africa, of early life parameters in relation to childhood respiratory symptoms and lung function.

Methods
Children attending schools in two contrasting areas of Nairobi, Kenya were recruited to a cross-sectional study of childhood asthma and lung function (Tupumue). Questionnaires quantified respiratory symptoms and environmental exposures; lung function was measured by spirometry; parents were invited to bring the Maternal and Child Health (MCH) Booklet containing records of birth weight and serial weights during infancy.

Results
2373 children participated, 52% girls, median age (interquartile range), 10 years (8-13). Spirometry data were available for 1622. 500 parents provided MCH Booklets and birth weight and infant weight gain data were available for 323 and 494 children, respectively. In multivariate analyses, preterm birth was associated with 'recent wheeze'; odds ratio 1.64, (95% confidence interval 1.03, 2.62), p=0.038; 'trouble breathing' 3.18 (95% CI 2.27, 4.45), p<0.001; 'dry irritant nocturnal cough 2.36 (95% CI 1.63, 3.41), p<0.001. Birth weight (kg) was associated with FEV1 z-score, regression coefficient β 0.30 (95% CI 0.08, 0.52), p=0.008, FVC z-score 0.29 (95% CI 0.08, 0.51), p=0.008 and restricted spirometry, odds ratio 0.11 (95% CI 0.02, 0.78), p=0.027. An association between infant weight gain (kg/month) and FEV1/FVC z-score β -0.61 (95% CI -1.23, 0.01), was borderline significant p=0.053.

Conclusion
For the first time in a sub-Saharan setting, associations have been identified in a single study between childhood respiratory symptoms and preterm birth and between childhood lung function and birth weight and infant weight gain. These associations are consistent with those reported in high income countries and highlight early life factors in the aetiology of asthma and lung function abnormalities in sub-Saharan Africa.

Allergic asthma phenotype among Nigerians: towards personalized care

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Introduction

Asthma management, particularly for severe asthma, is transitioning towards personalized care. Allergic phenotype is characterized by sensitivity to aeroallergens on skin prick testing (SPT) or elevated serum IgE. The proportion of Nigerians with allergic asthma has not been extensively reported. This is needed for treatment priority setting.

The aim of the study is to determine the proportion and pattern of allergen sensitization on SPT among Nigerians with asthma.

Methods

A retrospective review of SPT for persons with diagnosed asthma in Lagos. The allergens tested were grass mix (GM), Bermuda grass (BG), Dermatophagoides pteronyssinus (DP), Dermatophagoides farinae (DF), Aspergillus fumigatus (AF), German Cockroach (GC), Dog Dander (DD), Blomia tropicalis (BT) and Alternaria alternata (AA). A positive test was considered as a reaction ≥3mm. We report the frequency of positive tests and considered the presence of one positive test as allergic asthma

Results

Two hundred tests were analyzed for 90 (45%) males and 110 (55%) females. Their age ranged between 4 - 101 years, the median age was 39 years (IQR 27-51). Forty-six (23%) had concomitant allergic rhinitis. One hundred and sixty-three (81.5%) had a positive reaction to at least one allergen, 71(35.5%) and 68 (34%) had a positive reaction to 2-3 and >4 allergens respectively. The pattern of allergen sensitivity is as follows: DP 131/200 (65.5%), DF 129/199 (64.8%), German cockroach 99/199 (49.7%), BT 33/89 (37.1%), AF 52/200 (26%), Grass mix 40/187 (21.4%), DD 25/125 (20%), AA 9/89 (10.1%), and BG 11/136 (8.1%). There was no difference in the frequency of allergic sensitization when categorized by age, sex, and presence of concomitant allergic rhinitis.

Conclusion

Most asthmatics referred for SPT had allergic asthma and indoor allergens (dust mites, cockroaches, and fungi) were the most common sensitizers. This result provides preliminary guidance towards treatment, but further studies are needed because a clinical suspicion of allergy may be the indication for these tests.

Delay in seeking healthcare for children less than five years with severe pneumonia in Mulago tertiary care hospital, Uganda

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Introduction
Over 95% of pneumonia-associated deaths in children occur in low-income countries and this is partly due to delayed healthcare seeking. Data on factors associated with delays in seeking care for children with pneumonia in Uganda is scarce.
The study aimed to determine the prevalence, describe the factors associated with delay, and barriers and facilitators of prompt healthcare seeking for children under five years with severe pneumonia.

Methods
A mixed methods cross-sectional study was conducted among 384 caregivers of children with severe pneumonia at Mulago National Referral hospital (MNRH). Quantitative data was collected using structured questionnaires and qualitative data through focus group discussions with caregivers. Logistic regression analysis was used to determine the factors that were associated with delay in seeking healthcare. Content thematic analysis was used to analyze for barriers and facilitators to health care seeking.

Results
The prevalence of delay in seeking healthcare was 53.6% (95% CI: 48.6-58.6). Long distance to the hospital (AOR = 1.94, 95% CI 1.22−3.01, p =0.003), first seeking care in pharmacies and drug shops (AOR = 3.33, 95% CI 1.85−6.01, p =0.001), and monthly income 28USD (AOR = 2.27,95% CI 1.33−3.86, p =0.003) were independently associated with delay in seeking healthcare. Limited knowledge of symptoms, delayed referrals, self-medication, and low level of education were barriers to prompt healthcare seeking while recognition of the severity of symptoms, support from spouses, and availability of money for transport were key facilitators of early healthcare seeking.

Conclusion
More than half of the caregivers delayed seeking healthcare for their children with severe pneumonia. Long distance to the hospital, delayed referral, family income, education level of caregiver, recognition of symptoms and their severity as well as family support influence prompt healthcare seeking.
Research in effective interventions to improve prompt healthcare seeking for children with severe pneumonia is recommended.

Surviving a minimal invasive program in a developing country

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Introduction

It was always an aphorism and advise not to change a winning horse. But who look in depth in history will realize that no horse is winning forever and that every time frame has its own winners as there is no place for the myth of winning all the time. In medicine it is the same, once upon a time it was the collapse therapy was the winning horse for TB treatment then with the discovery of anti-tuberculous drugs it becomes obsolete. The examples are uncountable in surgery. minimal invasive approaches are of increase use nowadays in every surgical speciality. yet, some argue that it is not possible for developing countries owing to the nature of diseases present and the cost that render it ineffective.
we investigate the results of a VATS program in a sub-urban center in a developing country during the last 10 years.

Methods

this is a retrospective observational study conducted in Assiut University, CardioThoracic Surgery Department in Assiut, Egypt. we enroll all patients that underwent VATS procedure for therapeutic and diagnostic intends in the last 10 years. we collect the data regarding total number of VATS cases in comparison to open surgery cases, rate of conversion, mortality and need for another operation after VATS procedure.

Results

during the last 10 years since the developing of VATS program in our center in 2012, we operate upon more than 500 cases using VATS approach. since 2016, 97.7% of all cases were done using uniportal VATS technique which was adopted after Prof.Gonzalez workshop in February 2016 in our center. the rate of conversion from VATS to open surgery was 11.2% then reduced to 8% then raise up to 20% during the last 3 years reflecting change in patients selection criteria and learning curve of surgical team. there was no Intraoperative mortality in our series.

Conclusion

VATS is a winning horse of todays thoracic surgical approaches. learning curve and implementation of VATS program in a developing country with limited resources can be achieved with good overall results to patients and surgeons

Uniportal thoracoscopic decortication: using SAFE approach "start away from empyema approach"

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Introduction
Video-assisted thoracoscopic surgery (VATS) is now a gold standard in treating early-stage empyema, while much debate still exists considering the effectiveness of this approach for late-stage empyema. Most concerns arise from the crowded rib cage, narrow working space, and ability to free trapped lungs quickly, mainly if uniportal VATS is used. However, unlike uniportal VATS lobectomy, there is no consensus about standard steps for uniportal VATS decortication to ensure smooth and effective surgery. We try to offer standard, easy-to-replicate steps for this approach to evaluate the efficacy and safety of the "start away from empyema" approach for uniportal VATS decortication in the management of stage II and III empyema.

Methods
A prospective case series study has been conducted on 25 patients. All patients with stage II and III empyema were admitted to the Cardiothoracic Surgery Department between October 2017 and March 2020. VATS procedure was done under general anesthesia by a double-lumen tube for selective ventilation. Demographic data, preoperative diagnosis, intraoperative findings, hospital stay, and complications were recorded.

Results
Twenty-five patients were enrolled in this study with a median age of 35 years. The duration of illness ranged between 14 and 60 days, with a median (IQR) of 25 (17) days. In (88%) of the patients, there was a successful outcome defined as a near-complete resolution on Chest X-ray (scoring of 3 or 4) and chest US (scoring of 2 or 3). Only three (12%) patients had a partially successful outcome. All patients with partial success suffered from infection associated with malignant effusion.

Conclusion
"Start away from empyema" approach for uniportal VATS decortication in stage II and III empyema could be safe and effective in treating loculated nonmalignant pleural effusion.

Giant Mediastinal ganglioneuroma in a Female Child

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Introduction
Gangioneuromas are rare benign neurgenic tumors which arises from neural crest cells that represents the final maturation stag of neuroblasts [1]. The incidence of ganglioneuoma was reported to be 1 in 1,000,000 and thought to develop de Nov rather than by maturation of existing neuroblastoma [2]. There are no known risk factors, however the tumours may be associated genetic problems, such as neurofibromatosis type 1 [3]. Ganglioneuromas are commonly classified as paediatric mediastinal tumours occurring in females more than males with a ratio about 3: 1 [4]. Most of the cases are asymptomatic and usually discovered accidentally.

Methods
Surgical resection of the tumour was performed by a team of thoracic and neurosurgery via right slandered postero-lateral thoracotomy in the fifth space. During surgery the tumour was found to be well encapsulated with firm consistency, well circumscribed not invading any nearby structures. Due to the huge size of the tumour, it was resected in two pieces.

Results
well improvement post operative.

Conclusion
From this case presentation we concluded that mediastinal ganglioneuroma is a rare nerogenic tumor that may be asymptomatic or produce vague symptoms in spite of having a huge size. Mediastinal glanglioneuroma can be diagnosed pathological preoperative by using CT guided needle biopsy. Surgical resection is mandatory to relieve symptoms and avoid the extremely rare possibility of transformation to malignant form.

Predictors of Tuberculosis Treatment Outcomes in Public and Private Health Institutions, Southeast, Nigeria; An Implication for Policy Implementation, Patient Centered Education and Treatment Follow-Up

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Introduction
Although Tuberculosis treatment centres exist in Nigeria, information on tuberculosis treatment outcomes and their predictors especially in private health facilities are poorly documented in most places. This study therefore evaluated predictors of tuberculosis treatment outcomes in public and private health institutions in Abakaliki, Southeast Nigeria.

Methods
A retrospective study of patients managed for tuberculosis in the two facilities over a five year period (Jan 2018 to December 2022). All patients that have completed treatment over the study period were enrolled. Relevant information from the case register was retrieved and entered into proforma and study forms. Tuberculosis treatment outcomes were evaluated according to World Health Organization (WHO) and National Tuberculosis and Leprosy Control Program (NTBLCP) guidelines

Results
A total of 522 and 732 Tb clients were enrolled in AE-FUTHA and M-4H and their mean ages were 45.3±7.2 years and 46.1±3.8 years in AE-FUTHA and M-4H respectively. Majority (84%) were new cases with treatment success rate of 82.6% in both facilities (431/522 in AE-FUTHA and 605/732 in M-4H). Treatment outcome showed that relapse, treatment failure and death were 1.5%, 1.0% and 4.6% respectively in AE-FUTHA, 1.4%, 1.2% and 6.4% respectively in M-4H with default averaging 10% in both facilities. Age (15-29), far distance to health facility (>5km) and Tb category (re-treatment) were predictors of poor Tb treatment outcome in AE-FUTHA while area of residence (rural), far distance to health facility (>5km) and Tb category (re-treatment) were predictors of poor Tb treatment outcome in M-4H.

Conclusion
The patients were mostly males with twice (1.6%) DRTb than the females. Although treatment success rate (82.6%) was close to the 85% WHO bench mark, there were still large pockets of default with similar predictors of poor treatment outcomes in both facilities. Young people may need to be monitored closely while on TB treatment to ensure improved treatment outcome. Defaulter rate can be reduced by patient-centered education and counseling, follow-up reminder system, effective contact tracing, and referral to support group. Decentralization of treatment centres to rural areas would further reduce defaulter rate.
Key Words: Tuberculosis; Predictors; Treatment outcome; Patient; Education; Follow-up; policy implementation

Lung function trajectories in South African children with pulmonary TB: a prospective study

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Introduction
Post-tuberculosis lung disease is increasingly recognised in adults. There are little data in children, despite a high burden of TB disease. We aimed to investigate the impact of childhood pulmonary tuberculosis (PTB) on lung function.

Methods
A longitudinal prospective study of children <15years, with suspected PTB. Children were classified as confirmed (microbiologically proven), unconfirmed (clinical diagnosis), or unlikely PTB (non-PTB lower respiratory tract illness (LRTI)) according to NIH consensus definitions. Spirometry was done at baseline, 1, 3 months in all, and in addition at 6 and 12 months in confirmed and unconfirmed PTB.

Results
152 children with at least 1 successful spirometry test from September 2015-August 2022 were included: 62 (41%) confirmed PTB, 61 (40%) unconfirmed PTB and 29 (19%) with non-PTB-LRTI. Median (IQR) age was 10.1 (7.5, 11.5) years; 51% were male and 10% were living with HIV. At enrolment, 76% had abnormal spirometry, with restrictive disease most common. Spirometry [forced expiratory volume in 1 sec z-score (z-FEV1); forced vital capacity z-score (z-FVC)] improved in all groups over time. However, in confirmed PTB, z-FEV1/FVC decreased by 3 months [from 0.2 (-0.5, 1.4) to -0.4 (-1.1, 0.5)], and remained low through 12 months. In contrast to children with confirmed PTB, those with unconfirmed disease had steady improvements in z-FEV1 and z-FVC to 12 months. Risk factors for lower
lung function included older age, female sex and nutritional impairment.

Conclusion
Children with confirmed PTB had reduced lung function over 12 months. Childhood PTB may set a developmental pathway of lung impairment through life.

Interventions to reduce outdoor air pollution and its impact on asthma outcome: A systematic review

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Introduction
Asthma is one of the most common chronic diseases in children and adults. Exposure to air pollutants can lead to asthma symptoms, exacerbations, and hospitalizations. This systematic review was conducted to collate data on studies of outdoor air pollution exposure reduction and asthma outcomes.

Methods
We identified studies from CENTRAL, EBSCOHost, PubMed, Science Direct, Scopus, and Web of Science, articles written in English published in the 10 years up to 31 March 2022. We included randomised (RCT) and non-randomised studies that investigated the effects of individual-level outdoor air pollution reduction interventions on asthma outcomes: symptoms control (asthma control test (ACT), childhood ACT (c-ACT), asthma exacerbations, forced expiratory volume in one second (FEV1) and ratio of forced expiratory volume in one second to forced vital capacity (FVC).

Results
Seven studies (one RCT) met the inclusion criteria. Participants' ages ranged from 0 to 65+ years, and the duration of studies ranged from 8 weeks to 9 years. All studies were at risk of bias, as there was no blinding, most had no active intervention and there was lack of clarity on participants selection in some studies.

In one study, 50% of patients reported better symptoms, ACT ≥20 improved post intervention 41.1% to 60.7% whereas the other reported mean (SD) ACT increase from 20.0 (2.4) at baseline to 21.5 (2.3) after intervention. For the children who began with ACT or c-ACT score of less than 20, there was significant improvement and a mean difference of 3 and 4 points, respectively. There was a reduction number of daily asthma admissions, mean 4 vs 2.8 admissions, $p < 0.001$. Asthma-related emergency department visits reduced by 25%. Lung function test changes varied from none to greater changes in FVC and FEV1. Due to the diversity of study designs we could not do meta-analyses.

Conclusion
We found few studies of outdoor air pollution reduction interventions on asthma outcomes despite the importance of this topic. The studies we did find had several methodological limitations, but some indicated potentially beneficial effects of the intervention. This field would benefit from further high quality RCT evidence to inform policy and decision making.

The Utility of Clinician-Performed Cardiopulmonary Ultrasound Assessment of the Acutely Breathless Patient: Breathlessness Early Detection with Ultrasound (BED-US) Study

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Introduction

Breathlessness is frequently a diagnostic challenge, being the primary manifestation of disparate pathological entities including cardiopulmonary, haematological and neuromuscular diseases. Clinical signs similarly variable limiting precision in treatment decisions without further investigations. A cardiopulmonary, clinician-performed point-of-care ultrasound (PoCUS) scan provides rapid imaging to support clinical decision-making. The aim of this study was to determine if information gained by PoCUS supported or changed clinical decision pathways in a busy Emergency unit in a low income country.

Methods

A prospective cohort study was conducted at the accident and emergency department of the Kenyatta National Hospital (KNH), Nairobi, Kenya, between May 2019 and March 2021. Convenience sampling of 212 acutely breathless patients was conducted in parallel with purposive sampling of the attending doctors with clinical responsibility for care of the recruited patients. Patients were scanned using PoCUS, by a blinded study physician according to the modified Rapid Assessment of Dyspnoea with Ultrasound (RADiUS) protocol. The results were provided to the treating physician and patients followed up for 72 hours.

Results

The patients in the study were young; median age of 48 years (IQR; 34-65), with a slight female preponderance 50.7% (107/212). The majority of patients 93.4% (198/212) had grade 3 or 4 according to the modified Medical Research Council (mMRC) dyspnoea scale. Abnormal cardiac scans were present in 78.6% (162/206) of patients and abnormal lung and doppler scans in 83% (174/211). Cardiovascular comorbidities were common, with hypertension the most common at 36.6% (78/212). Pleural effusion was the most common cardiopulmonary abnormality noted, 61% (129/211), followed by alveolar interstitial syndrome in 53.5% (113/211). Overall, PoCUS changed the leading diagnosis in 36.3% of cases. PoCUS increased pleural effusion as the primary diagnosis from 6.9% (14/204) to 14.7% (30/204) (p=0.031). Uncertainty in the primary diagnosis: "Other" was reduced from 19.6% (40/204) to. 9.3% (19/204) (p=0.002). Clinician reported confidence improved on a 10-point visual analogue scale (VAS) score by a mean(95%CI) of 1.05 (0.88,1.22) with the addition of the PoCUS information.

Conclusion

The provision of PoCUS results to clinicians in an emergency department in a low income setting substantially improved the diagnostic certainty and clinician confidence. Combining a basic lung and cardiac PoCUS into a syndromic "dyspnoea" algorithm, has the potential to elucidate the primary causes of respiratory distress which are potentially rectifiable and also to improve patient outcomes by improved diagnostic certainty especially pleural disease and reducing the number of uncertain aetiologies of dyspnoea.

Going AGILE (Adapt, Grow, Innovate, Lean-in and Execute); project management lessons learned from the Nairobi 2022 TB Prevalence Survey

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Introduction
Tuberculosis (TB) is a public health problem of global concern. In 2022, the World Health Organization Global Task Force on TB Impact Measurement convened to update expert guidance on conduct of TB prevalence surveys. It asserts that an update to the practice of prevalence surveys is required; to reflect all the experience and lessons learned from surveys implemented in the past 15 years. The Lime Book is considered the Holy Grail of TB prevalence surveys. However, culture and context specific project execution lessons learned are lacking making it difficult for researchers to learn from best practices and pitfalls of predecessors. We aim to present lessons learned from the aspect of project management of a TB prevalence survey in a resource-limited setting.

Methods
Observation and documentation were used to record the best practices and pitfalls during the cross-sectional study designed Nairobi 2022 TB Prevalence Survey conducted between April to December 2022 in Nairobi, Kenya.

Results
Best practices included; initiation phase; early stakeholder engagement a year prior with the national TB program, bureau of statistics, chiefs, and community leaders. Community entry meetings quell study rumours especially chief's baraza. Security arrangements are required in advance for the safety of the equipment and staff. Village elder engagement for mobilization is required in addition to the community health volunteers (CHVs) to gain trust of the community. Procurement and cost management; bulk purchasing and negotiating fixed cost contracts to mitigate budget expansion is necessary. Serialization of MFS invitation cards to track field interviewer assignment, digital listing tracking to prevent going above sample size.

Conclusion
Knowledge management is a critical aspect of project management. Robust documentation and management of a lessons learned repository will form an important part of the pillar on analysis and use of TB surveillance and survey data at country level. Culture and context specific information in terms of project initiation, planning, execution, monitoring and evaluation as well as closure is needed. Focused incorporation of this aspect in future projects on TB prevalence surveys will make them more efficient by leveraging on predecessor data.

Chronic respiratory disease is common in HIV infected children and adolescents in long-term care in Nairobi, and is associated with air pollution exposure.

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Introduction
Children and adolescents living with HIV (CAHIV) in resource limited settings may experience recurrent and severe respiratory disease and are at risk of residual lung damage. We sought to determine the prevalence and clinical presentation of chronic respiratory morbidity among CAHIV in longterm care at a tertiary referral hospital in Nairobi.

Methods
We conducted a cross-sectional study among HIV infected children and adolescents age <19 years actively in care at the Kenyatta National Hospital comprehensive care clinic. Parental/guardian consent and assent was obtained as appropriate, sociodemographic and clinical information were obtained through interview and review of their medical records, physical examination relevant to respiratory disease, and exercise testing (six-minute walk test).

Results
We enrolled 320 CAHIV, they were of median age 13 years (IQR 10-16), 46% were female, 61% lived in houses of 1-2 rooms, 50% used unclean cooking fuel most of the time, and 58% had high exposure to outdoor air pollution from high vehicle traffic or combustion activities near their home or school. All were on antiretroviral therapy, 11% had low CD4 count, and 79% were virologically suppressed 90th centile for age), 6% had finger clubbing, lowest oxygen saturation at rest was 95%, and 7% experienced oxygen desaturation of 3% or more during exercise testing. High exposure to outdoor air pollution was associated with higher burden of chronic respiratory morbidity (OR 3.31, p=0.032). Households of children who had chronic respiratory morbidity were less likely to use polluting cooking fuel indoors (OR 0.26, p=0.003).

Conclusion
More than half of the CAHIV in our care had chronic respiratory symptoms the most common clinical presentation being breathlessness, cough and tachypnoea at rest, and outdoor air pollution is an associated risk factor. Structured interventions are needed to provide optimal care specific to their needs.

Latent Trajectory Modelling of longitudinal clinical data: An application to birth cohort study in the Western Region of The Gambia

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Introduction
Mixed effects models and Generalized estimation equations are the most frequently adopted approaches for analysing complex multivariate longitudinal data. However, these methods are not concerned with categorising participants with similar patterns. More recently, the focus of modelling such data has moved towards using person-centered statistical approaches such as Latent Growth Mixture models which allows identification of heterogeneity within a population. We aimed to use this approach to investigate whether distinct developmental trajectories of pneumococcal carriage, which remains high among Gambian infants, are present from birth through early childhood among PCV13 vaccinated Gambian infants.

Methods
PCV13 vaccinated rural Gambian children were followed up at regular intervals from birth to two years. Pneumococcal carriage development trajectories were characterised using latent growth mixture model. Generalised linear mixed effects model was then used to investigate the association between early life predictors and trajectories identified

Results
Among 120 children with 1646 observations, a model with two distinct trajectories, persistently high (N=42; 35%) and low trajectory (n = 78; 65%) fit the data significantly better than other models (p= 0.004). Exposure to biomass smoke (OR 3.5, 95% CI: 1.05 − 8.35) and inflammation (OR 1.19, 95% CI: 1.01 − 2.81) were identified as risk factors for high pneumococcal carriage trajectory.

Conclusion
A distinct group of participants demonstrates a persistently high pneumococcal carriage that may partly be established at birth. Reduction of smoke exposure for these participants might reduce the risk of infections such as pneumonia

Diversity of indoor fungi and associated respiratory disorders in Nairobi and Busia Counties, Kenya

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Introduction
Poor sanitation and environmental pollution are major contributors to the development of respiratory tract infections (RTIs) in most African cities. RTIs are globally responsible for one-third of infectious diseases−accounting for 4.3 million annual deaths. Although fungi are known RTI pathogens, their contribution and true infection burden remain unknown in Africa. However, invasive fungal infections are associated with high mortality rates for the diseases. Fungi cause allergies that affect the upper and lower respiratory tract, eyes, intestinal tract, and skin, yet, public awareness and information on indoor fungi contamination and potential health implications associated with exposure to fungi in Kenya's urban residential homes are limited. Furthermore, no studies have been steered to determine the biodiversity of fungi mycoflora and their distribution in those locations.

Methods
This was a cross-sectional study conducted between January 2018 and December-2020. Residential Units from Nairobi and Busia Counties were selected based on a systematic sampling method. Questionnaires were administered to the occupants of the selected households with key components on Demographic, House and Environmental Characteristics. Fungal exposure and assessments of the households were conducted using sedimentary sampling methods. Fungal identification was done by direct microscopy and morphological features

Results
A total of 740 fungal species were isolated from 220 selected households. The findings and their prevalence followes Actinomycetes 47/740(6.4%), Rhodotorula 80/740(10.8%), Mucor 38/740(5.1%), Aspergillus flavus 48/740 (6.5%), Aspergillus fumigatus 14/740(1.9%), Aspergillus niger 45/740 (6.1%),whitefungi 30 /740 (4.1%), Penicillium137/740(18.5%), Trichoderma 16/740(2.2%), Alternaria spp 33/740 (4.5%), Fusarium 63/740(8.5%), fungi 67/740, (9.1%) and white yeasts 94/740 (12.7%) respectively. More than half (121; 55.0%) of the households had between>5 occupants, with mean age of 39 years. Ninety (40.9%) respondents have a member in their household who has allergies, asthma, and bronchitis. (185; 84.9%) of the homes that were infested with rats, 192 (87.3%) had cockroaches, and ants, whereas, 104 (47.3%) homes had either feathered pets. The use of Biomass fuel was observed in (143; 66.8%), Poor ventilation and dampness were reported in147 (67%) of the homes.

Conclusion
There is a vast distribution of fungi in households within Nairobi and Busia Counties in Kenya.There is a need for increased public awareness and target effort to minimize the burden to reduce the associated respiratory disorders

Tupumue: a study of asthma, lung function and air pollution exposures in schoolchildren in an informal (slum) settlement and a more affluent area of Nairobi

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Introduction
Although one billion people live in informal settlements (also known as slums), the consequences for respiratory health of living in these settlements remain largely unknown. An unanswered question is whether the 350-500 million children living in informal settlements are at increased risk of asthma, the commonest childhood non-communicable disease. The aim of the Tupumue (Kiswahili let us breathe) study was to determine whether children living in an informal settlement in Nairobi, Kenya are at increased risk of asthma and to identify pertinent environmental exposures.

Methods
Children attending schools selected at random in Mukuru (a large informal settlement in Nairobi) and the more affluent residential area of Buruburu were compared. Questionnaires quantified respiratory symptoms and environmental exposures; lung function was measured; personal exposure to particulate matter (PM2.5) was measured in a subset and used to estimate exposure for all participating children.

Results
2373 children participated, 1277 in Mukuru (median, interquartile range, age 11, 9-13 years, 53% girls), and 1096 in Buruburu (10, 8-12 years, 52% girls). Mukuru schoolchildren were from less affluent homes and had greater exposures to air pollution sources. Estimated PM2.5 exposures were higher in Mukuru (median 39µg/m³, IQR 35-43) than in Buruburu (median 22µg/m³, 20−25), $p<0.001$. When compared with Buruburu schoolchildren, Mukuru schoolchildren had a greater prevalence of the symptoms, 'recent wheeze' (9.5% vs 6.4%, p=0.007) and 'trouble breathing' (16.3% vs 12.6%, p=0.01), and these symptoms were more severe (sleep disrupted by wheeze, 6.9% vs 4.2%, p=0.005) and problematic. Diagnosed asthma was more common in Buruburu schoolchildren (2.8% vs 1.2%, p=0.004). There were no differences in lung function between Mukuru and Buruburu schoolchildren. In multivariate analyses, significant adverse associations were observed with self-reported exposure to 'vapours, dusts, gases, fumes' ('wheeze', 'trouble breathing'), use of mosquito coils ('wheeze'), adult smoker(s) in the home ('trouble breathing'), and living <500m from a major road ('trouble breathing').

Conclusion
Children living in informal settlements are more likely to develop symptoms consistent with asthma that are more severe but less likely to be diagnosed as asthma. Self-reported, but not objectively measured, exposure to air pollution was associated with this increased risk.

Chronic respiratory disease in adult out-patients in three African countries: a cross sectional study

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Introduction
The greatest burden of chronic respiratory disease is in low- and middle-income countries, with recent population-based studies reporting substantial levels of obstructive and restrictive lung function. Less is known about the characteristics of patients with chronic respiratory diseases attending out-patient clinics. The main objective of this study was to characterize the common chronic respiratory diseases encountered in hospital outpatient clinics in three African countries.

Methods
This was a cross-sectional study of consecutive adult patients with chronic respiratory symptoms (>8 weeks) attending hospital outpatient departments in Addis Ababa, Ethiopia, Nairobi, Kenya and Khartoum, Sudan. TB was excluded on clinical grounds and negative GeneXpert test. Patients were assessed using a respiratory questionnaire, spirometry and chest radiography. The diagnoses of the reviewing clinicians were ascertained.

Results
A total of 519 patients (209 Kenya, 170 Ethiopia, 140 Sudan) participated; the mean age was 45.2 years (SD 16.2); 53% were women, 83% had never smoked. Reviewing clinicians considered that 36% (95% confidence interval [CI] 32−40) of patients had asthma, 25% (95% CI 21−29) had chronic bronchitis, 8% (95% CI 6−11) chronic obstructive pulmonary disease (COPD), 5% (95% CI 4−8) bronchiectasis and 4% (95% CI 3−6) post-TB lung disease.
Symptoms consistent with asthma (wheeze in the last year) were reported by 71% (66-74%), being highest in Ethiopia (92%, 87-95%) and lowest in Sudan (56%, 48-65%). 15% (9.8-22%) of patients had normal spirometry in Ethiopia, 38% (29-48%) in Sudan and 48% (29-56%) in Kenya. Spirometry consistent with COPD was present in 35% (95% CI 30−39). Restrictive spirometry was evident in 38% (33-43%), however there was usually concomitant fixed airflow obstruction. Pure restriction was present in 17% (14-21%) and not associated with an excess of symptoms.

Conclusion
In Ethiopia, Kenya and Sudan, asthma, COPD and chronic bronchitis account for the majority of diagnoses in non-TB patients with chronic respiratory symptoms. The suboptimal diagnosis of these conditions will require the widespread use of spirometry. Studies to identify the clinical burden of chronic respiratory diseases in other African countries are required.

Assessment and associated factors of respiratory health-related quality of life of drug susceptible and multi-drug resistant pulmonary tuberculosis survivors from two Nigerian centers

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Introduction
Pulmonary Tuberculosis (PTB) is a common infection affecting millions of adults especially in low- and middle-income countries, with Nigeria being one of the high burden countries. Multi-drug resistant tuberculosis (MDR-TB) is characterized by a long (18-24 months) and costly treatment and associated high morbidity rates. This study aimed to asses and report on associated factors of respiratory health-related quality of life of drug susceptible and multi-drug resistant pulmonary tuberculosis survivors from two Nigerian centers.

Methods
One hundred and ten (110) participants comprising 43 post-susceptible-TB, 45 MDR-TB and 22 age/gender-matched healthy controls were recruited to participate in this study from TB centers in Kano (Infectious Disease Hospital) and Plateau (Jos University Teaching Hospital) states using contact information from treatment registers. Their sociodemographic characteristics comprising age, sex, BMI, occupation, socioeconomic status was measured using standard measures. Respiratory health related quality of life was measured using the Saint George's respiratory Questionnaire (SGRQ), which was scored from 1-100 points. Both descriptive and inferential (linear regression) statistics was utilized in analyzing the data obtain using SPSS v23 software, with alpha probability significant at 0.05 level.

Results
The mean age, height, weight and BMI of the study participants were 34.5 9.4 years, 1.65 0.1m, 61.3 11.5kg and 21.9 6.4 kg/m2, respectively. Majority of the participants were males (61.8%). The results of the study revealed that the total score on the SGRQ values for post-susceptible- TB, MDR-TB and healthy controls were 30.6 ,28.77, 32.3 ,24.83 and 5.3 ,8.55 points, respectively. One-way ANOVA indicated that SGRQ scores of survivors of both drug susceptible TB and MDR-TB were comparable, and were significantly higher than that of healthy controls (p=0.001). Furthermore, linear regression analyses revealed that none of the sociodemographic variables of age, sex, BMI, occupation, socioeconomic status were significantly associated with respiratory health related quality of life of the study participants (R= 0.16, R2 = 0.028; Beta;31.155; CI: -8.488 to 70.798; p=0.121).

Conclusion
It was concluded that survivors of drug susceptible TB and MDR-TB have a moderately impaired respiratory health related quality of life, which was not influenced by sociodemographic variables.

Antibiotic Prophylaxis After Thoracic Drainage: Systematic or Habitual Without Evidence?

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Introduction
Some surgical procedures are considered risky and therefore require antibiotic therapy that is not considered necessary by some teams. Therefore, these prescriptions depend on the attitude of each team, the ecology of the care service, the immunological profile of the patient as well as his antecedents. Our study focuses on the prescription of antibiotics after thoracic drainage and its interest in the prevention of infection.

Methods
This is a retrospective descriptive study of all cases that required thoracic drainage in the surgical department of our hospital and done by the same doctor in the same room and with the same aseptic attitudes. A clinical, biological and radiological follow-up was controlled by the same doctor and validated by a professor of the service. Purulent pleurisy and penetrating thoracic trauma were excluded from the study as they require a systematic prescription of antibiotic therapy according to the service protocols.

Results
163 cases were included in the study and divided into 2 groups. 100 patients received antibiotic therapy and a second group of 60 patients did not receive antibiotics. 18 patients were found to have complicated post-chest drainage infection including homolateral pneumonia (7), drainage site infection (4), atelectasis (4), generalized infection (5), elevated Crp (9), purulent pleurisy (4). 95% of the patients benefited from daily physical therapy and the majority of the patients benefited from daily dressing changes. The follow-up of all patients was good and the mortality was nil.

Conclusion
Post-opérative infection is multifactorial and the prescription of any antibiotic therapy must depend on several elements.

Catastrophic health expenditure, social protection coverage, and financial coping strategies amongst adults with symptoms of chronic respiratory diseases in Kenya: a cross-sectional study

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Introduction
Despite the socioeconomic consequences of an increasing chronic respiratory disease (CRD) burden, there is limited evidence on catastrophic health expenditure (CHE) amongst people with CRD symptoms in Kenya.

Methods
We conducted a cross-sectional survey of 296 consecutively-recruited adults with CRD symptoms at five public healthcare facilities in Kenya, collecting data on patient costs, National Health Insurance Fund (NHIF) coverage, and financial coping strategies. CHE prevalence was calculated using World Health Organization thresholds: direct "out-of-pocket" costs >10% of a household's monthly total expenditure ("10%-threshold"); and direct costs >40% of a household's monthly "capacity to pay" (non-food/rent/leisure/amenities expenditure; "40%-threshold"). Multivariable logistic regression analyses generated adjusted odds ratios (aOR) with 95% confidence intervals (95%CI) of factors associated with CHE.

Results
Mean direct medical costs, non-medical costs, and lost income contributed 47%, 27% and 26% of total costs, respectively. Most participants (212/296, 72%) lacked NHIF and 95% (282/296) used coping strategies during care-seeking. At 10%- and 40%-thresholds, 73/296 (25%) and 153/296 (52%) experienced CHE. Belonging to the poorest quintile (aOR 4.1, 95%CI=1.1-15) and seeking care at a subcounty (aOR 8.9, 95%CI=3.2-25) or county (aOR 29, 95%CI=8.2-101) hospital were associated with CHE at 10%-threshold. Being female (aOR 2.2, 95%CI=1.2-4.2), belonging to the poorest quintile (aOR 2.5, 95%CI=1.0-6.0), and seeking care at a subcounty hospital (aOR 2.3, 95%CI=1.1-4.5) were associated with CHE at 40%-threshold.

Conclusion
These findings suggest a sizeable burden of CHE amongst people seeking care for CRD symptoms in Kenya, driven by gender and socioeconomic inequalities and impaired healthcare access.

Clinical Characteristics And Outcomes Of Covid 19 Pneumonia Patients On High Flow Oxygen Delivery Systems In Nairobi: A Retrospective Study

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Introduction
Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV2) is a novel virus that has caused a global pandemic leading to increased hospitalization and increased need for critical care and mechanical ventilation. As at 16th January 2023 more than 342,000 cases and more than 5,600 deaths were reported in Kenya. There is limited research and data on clinical characteristics and outcomes of patients with COVID-19 requiring high flow oxygen systems. The aim of this study was to describe the clinical characteristics and outcomes of critical COVID 19 pneumonia patients requiring high flow oxygen delivery system admitted in the critical care unit of Avenue hospital Parklands COVID isolation unit between 01 April 2020 and 01 April 2022

Methods
This was a retrospective cohort study among SARS-CoV2 confirmed patients requiring high flow oxygen delivery systems. The study area was Avenue Hospital Parklands records department. Data was extracted from the patients' records and was checked for completeness then entered, cleaned and analyzed using Statistical Package for Social Sciences (SPSS) version 26. Categorical data was summarized as frequencies and percentages while Continuous data was described as medians.

Results
: A total of 131 patients' records were included in this study. Male patients were 66% and median age was 57 years. Hypertension (52%) and diabetes (44%) were the commonest co-morbidities. Key laboratory and chest imaging findings included reduced PO2/FIO2 ratio (100%), elevated C-reactive protein (99%), lymphopenia (75%), elevated D-dimers levels (74%), elevated aspartate transaminase (63%) and high CT severity scores (100%).The median duration from onset of symptoms and initiation of mechanical ventilation was 7 days. All patients received steroids and prophylactic low molecular weight heparin. Other medications used included remdesivir (61%), tocilizumab (57%) and baricitinib (44%). All patients were put on mechanical ventilation with majority being put on non-invasive ventilation (NIV) (81%). The median length of ICU stay was 6 days and longer stay was associated with increased complications. The overall mortality of patients with critical COVID-19 pneumonia was 50%

Conclusion
Critical COVID-19 disease was more prevalent in male, older patients with associated pre-existing condition and mortality in critical COVID-19 disease was high (50%).

Prevalence and factors associated with smoking in Uganda

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Introduction
Smoking is a major risk factor for the development of lung health diseases worldwide including Tuberculosis, Lung Cancer and Obstructive Pulmonary diseases. Globally there is an increase in the number of people with lung health diseases with trends increasing annually. Smoking has been noted to decrease annually but at not the expected rates despite efforts to address it. Worldwide, smoking prevalence is 19.9% with a higher prevalence recorded among European countries;29.4% compared to African nations; 9.8%. The prevalence of smoking in Uganda is estimated at 15.1% from the Uganda Non-Communicable diseases risk factors survey conducted in 2014. Knowledge of the burden of smoking and progress made by efforts to combat smoking aids in planning for intensified low-cost smoking cessation programs to accelerate the eradication of smoking and hence improve lung health. Therefore, we set out to determine the prevalence of smoking in Uganda and its associated factors.

Methods
We conducted a cross-sectional review of the data obtained from the Uganda National Tuberculosis Prevalence Survey (UTPS) between 2014– 2015 among individuals 15 years and above. The UTPS set out to determine the prevalence of tuberculosis and associated factors in Uganda. We analyzed 41,148 records on age, sex, residence, level of education, occupation, marital status and smoking.

Results
The prevalence of smoking in Uganda is 13.9%. The significant factors associated with smoking include; age with OR 2.12, 3.23, 3.91,4.48,5.10 across age groups (25-34, 35-44, 45-54,55-64 and 65+ years), female sex; OR 0.21, marital status OR; married (0.83), separated (1.31), divorced (1.46), widowed (1.39), urban residence OR (1.20), education OR;0.60 and employment OR; civil service (1.15), health worker (0.57), student (0.24), farming (1.15), skilled labour (1.12)

Conclusion
The prevalence of smoking in Uganda is 13.9%. The significant factors associated with smoking include; age with OR 2.12, 3.23, 3.91,4.48,5.10 across age groups (25-34, 35-44, 45-54,55-64 and 65+ years), female sex; OR 0.21, marital status OR; married (0.83), separated (1.31), divorced (1.46), widowed (1.39), urban residence OR (1.20), education OR;0.60 and employment OR; civil service (1.15), health worker (0.57), student (0.24), farming (1.15), skilled labour (1.12)

Challenges in optimizing CASS procedures in a resource limited setup; a case of the KEMRI-CRDR laboratory

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Introduction
Cough aerosol sampling system (CASS) has shown promise as a tool for tuberculosis (TB) diagnosis in resource-limited settings. However, optimizing CASS procedures in these settings can be challenging due to various factors such as limited resources, lack of technical expertise, patient characteristics, and inadequate infrastructure.

Objective
To identify and discuss the challenges encountered in optimizing CASS procedures for TB diagnosis in a resource-limited setup.

Methods
A review of literature was conducted to identify the challenges encountered in optimizing CASS procedures in resource-limited settings. The literature search included peer-reviewed articles, conference proceedings, and technical reports.

Results
The challenges encountered in optimizing CASS procedures in a resource-limited setup include equipment procurement, technical expertise, quality control, standardization of procedures, data management, and sustainability. Inadequate resources can make it difficult to procure and maintain the necessary equipment, and the lack of technical expertise can affect the accuracy and reliability of CASS results. Quality control and standardization of procedures are also essential to ensure the accuracy and reproducibility of CASS results. Data management and sustainability are also critical factors to consider in optimizing CASS procedures. Patient characteristics also morph into the matrix and lack of proper understanding of the procedure can lead to poor performance and outputs.

To overcome these challenges, some possible solutions include building local capacity through training and capacity building, collaboration with external partners, establishing quality control measures, using standardized procedures, increasing the study participant knowhow of the process through proper explanations and visual aids and incorporating digital technologies for data management.

Conclusion
Optimizing CASS procedures in a resource-limited setup is essential for improving TB diagnosis in these settings. The challenges encountered in optimizing CASS procedures can be addressed by building local capacity, establishing quality control measures, and incorporating digital technologies for data management as well as increasing study participant knowhow of the process.

Laboratory Challenges in Conducting TB Prevalence Survey in Post -COVID pandemic Recovery Era: The Nairobi 2022 TB Prevalence Survey Experience

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Introduction
The COVID-19 pandemic either reversed, stalled, or lagged access to TB treatment and diagnosis thus worsening the burden of TB disease. According to the WHO 2022 TB report, about 10.6 million people experienced TB infection indicating a 4.5% global increase and 1.6 million TB deaths occurred. Confirmation of TB cases is in the ideal situation based on laboratory analysis; thus, mitigating risks in the laboratories of interest is essential. This study aimed at presenting laboratory challenges experienced while conducting a TB prevalence survey in the post- COVID-19 pandemic recovery era.

Methods
An observational technique was employed to identify and report on the laboratory challenges experienced while conducting the Nairobi 2022 TB prevalence survey which tested sputum samples from nine clusters in Nairobi, Kenya.

Results
The major challenges experienced included: inadequate laboratory infrastructure; power outages, process disruption due to shared lab equipment. Supply chain; delayed supply of essential reagents and consumables due to global stockout and regulations; the limited number of staff trained in biosafety level III containment laboratory limiting access to the laboratory; some participants declined sample collection limiting analysis of all presumptive cases; a two-fold increase in the number of initially projected samples impacting procurement plans and budget; and the unavailability of a backup laboratory within the study locality made the unplanned transition of processing tedious. Most of these challenges were successfully addressed hence reducing their significant impacts on the survey outcomes.

Conclusion
There was delayed TB diagnosis predominantly due to supply chain problems, expansion of the study budget, and missed diagnosis of some suspected cases due to decline to produce sputum. A thorough prospective analysis and a supplementary budget to mitigate unplanned challenges are necessary for prevalence surveys. Our experienced factors can be used to guide other researchers from low- resource settings on the fundamental issues to be addressed while conducting laboratory-based prevalence survey. This will enhance the development of quality systems that support medical research input and can be easily reconstructed in other low- and low middle-income research settings.

Factors Associated with Treatment Delays at DOTS Centers in South-West Nigeria

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Introduction
Delays in the diagnosis and treatment of tuberculosis can increase the spread of the disease in communities; this is a potential threat to all efforts at ending the disease. The aim of this study is to determine factors responsible for late presentation and treatment commencement in patients with tuberculosis.

Methods
This was a cross-sectional study conducted in three different primary health care centers in Ibadan, Nigeria. Participants were newly diagnosed patients with pulmonary tuberculosis. Their clinical and demographic data were obtained using a standardized questionnaire to determine factors associated with delays at presenting in the hospital and obtaining diagnosis. Delays were defined according to the National Tuberculosis Control Program. The questionnaire was administered by a trained research nurse. Data regarding patient-related factors and those regarding health system related factors were obtained from all participating patients.

Results
A total of 135 patients were recruited for this study, and 68 (50.4%) of them were males. The majority (60.7%) of them were young-aged (25-44 years) while about one-fifth were middle-aged (45-59 years). Almost 70% of the respondents lived in high-density areas and about 84.6% had received drug prescriptions from non-doctors prior to presentation. Patients' socio-economic status (p=0.006), type of residential area (p=0.015), current cigarette smoking status (p=0.016) and seeking treatment elsewhere before presentation (p=0.037) showed significant associations with duration between symptom onset and presentation at the facility. At the level of the health system, socio-economic characteristics (p=0.006) and seeking treatment elsewhere prior to presentation (p=0.024) showed significant associations with duration from presentation in the facility to sputum collection. There was also a statistically significant association between area of residence and the duration from sputum collection to availability of result (p=0.001) and the duration from presentation in the facility and commencement of anti-tuberculosis medication.

Conclusion
This study showed that there were delays in seeking care and establishing diagnosis of pulmonary tuberculosis. Associated factors for the delays were socioeconomic factors, area of residence, cigarette smoking and seeking care elsewhere before presentation. These factors should be considered in policy formulation towards the global effort at ending tuberculosis.

Assessment of Factors that Affect Diagnosis and Management of Childhood Tuberculosis Among Healthcare Workers in Siaya County, Kenya

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Introduction
Tuberculosis (TB), is the 9th leading cause of death worldwide from a single infectious agent. It ranked above HIV&AIDS causing 205,000 deaths among children in 2019. An estimated 1.1 million (11%) of TB cases in 2018 occurred among children (<15). Kenya ranked 10th globally and 4th in Sub-Saharan Africa of the 30 TB High-burden Countries that accounted for 87% of all global TB cases. Accurate and prompt diagnosis of childhood TB is essential for treatment success by Healthcare Workers (HCWs). This relies on thorough assessment of evidence from history of exposure, clinical examination and laboratory investigations by skilled HCWs. Establishing the childhood TB burden is challenging due to lack of standard case definition that requires positive sputum smear, varied clinical presentation in this age group and inconclusive definitive diagnosis. This study aimed at investigating factors affecting diagnosis and management of childhood TB among HCWs.

Methods
This cross-sectional study utilized mixed methods approach. Purposive sampling was used to select 18 health facilities. Simple random sampling was used to select 241 HCWs. Quantitative data was analyzed using inferential statistics and 2 test of association was used to determine associations between variables, while qualitative data was analyzed based on emerging thematic areas.

Results
HCW's current levels of knowledge on childhood TB diagnosis and management was associated with ability to conduct Directly Observed Treatment (DOT; $\chi 2$ 13.240, p<0.001), current employer ($\chi 2$ 4.246, p=0.041) and attendance of lecture/workshop on childhood TB in the past 12 months ($\chi 2$ 6.671, p=0.013). Additionally, facility-based factors were associated with HCW's knowledge on WHO 2010 mg/kg recommended daily therapy dosage for first-line anti-TB drugs ($\chi 2$ 18.770, p<0.001), availability of chest radiography ($\chi 2$ 26.772, p<0.001) and attendance of lectures and seminars/workshops ($\chi 2$ 4.872, p=0.032). Furthermore, majority (n=192; 80%) of HCWs identified constraints to diagnosis and management of childhood TB as drug management (n=46; 24%), procurement (n=71; 37%) and stock-outs and dosing (n=75; 39%)./

Conclusion
Levels of knowledge, facility-bas/////ed factors and constraints influenced HCW's ability to diagnose and manage childhood TB. Training HCWs to conduct DOT, investment in chest radiography and resolving constraints of drug management, procurement and stock-outs across health facilities was recommended.

Cytokine profile of a TB and TB/HIV co-infected cohort in Kenya

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Introduction
TB/HIV co-infections complexities including those on anti-retroviral therapy (ART), present challenges on efforts to reduce both infections. Cytokines produced by T-lymphocytes play a role in susceptibility and re-infection to TB. Purpose of this study was to understand how HIV and ART status affects recovery of Th cell effector function and cytokine profile in a TB and TB/HIV cohort on TB treatment.

Methods
A prospective study of TB participants who are either HIV-infected or HIV-uninfected from 3 clinical sites in Nairobi, Kenya. Blood samples were taken at start of and on completion of TB treatment from 6 groups of participants; Group A (TB-HIV-), B (TB-HIV+ART+), C (TB-HIV+ART-), D (TB+HIV-), E (TB+HIV+ART+), F (TB+HIV+ART-). Cytokine bead array (CBA) was used to assess human Th cell-derived cytokines isolated from plasma from Nil, TB1 and Mitogen QuantiFERON tubes, including; IL-5, IL-2, IL-6, IL-13, IL-4, IL-9, IL-10, IL-17A, IL-17F, IL-22, IFN-γ and TNF-α. CBA is a bead-based immunoassay used to quantify multiple analytes in samples using a flow cytometer. A total of 380 samples were analyzed.

Results
Between no TB and TB groups; There was significant changes seen in TNF-α, IL-5, IL-2, IL-13, IL-4, IL-17A and IL-17F. Slight significant changes was seen in IL-6, IL-22 and IFN-γ. No significant change was seen in IL-9. Results show reduced plasma IL-9, IFN-γ and IL-22 activation by mitogen in TB+HIV+ subjects that is independent of ART status, while IL-17A is moderately reduced in TB+HIV+ART- participants. Cytokine recall to TB1 antigen was observed to be similar across all TB groups, with the exception that a moderate reduction of IFN-γ and IL-17A was observed in the TB-HIV+ group.

Conclusion
Results identify defects in effector cytokines produced by Th cells that may persist after ART and contribute to poorer TB treatment outcomes in participants with HIV. Increase in T-lymphocyte activation already found in HIV patients, TB disease can have an impact on viral replication. Functional cytokine status of Th cell populations, including Th17 and Th22 cells, may differ during TB drug treatment. To understand these complexities, the profile of immune activation markers in TB patients needs to be continuously explored.

How effective is the primary COVID-19 vaccine series against the Omicron variant over time? Findings from a rapid living systematic evidence synthesis and meta-analysis

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Introduction
The Omicron variant of COVID-19 has had an important impact on global systems, including Africa's healthcare system. COVID-19 vaccines have become the primary method for most governments to limit COVID-19 hospitalisations and mortality. However, studies suggest that the effectiveness of the vaccines may wane over time. Thus, it is essential to understand the long-term Vaccine Effectiveness (VE) of COVID-19 vaccines to make evidence-informed decisions on whether and when to administer booster doses. Therefore, we aimed to synthesise evidence on the long-term VE of the primary series (e.g., 2 doses of a 2-dose regimen) of four COVID-19 vaccines (BNT162b2, mRNA-1273, ChAdOx1/AZD1222, and Ad26.COV2.S) against Omicron infections, hospitalisations, and mortality.

Methods
Every month, we conducted a rapid living review of studies reporting VE at baseline (0-6 weeks) and at least 16 weeks (follow-up) after a primary series. Single reviewers evaluated titles, abstracts and full-texts, and extracted data, with a second reviewer verifying at each stage. We pooled VE estimates using three-level meta-analytic models. The last update was 22nd February 2023. We used thresholds from the World Health Organization (WHO) to evaluate the adequacy of protection against infections (VE ≥ 70%, with a lower 95% CI ≥ 50%) and hospitalizations/deaths (VE ≥ 90%, with a lower 95% CI ≥ 70%).

Results
We included 22 studies. For infections, VE estimates across vaccine types declined from 62% [95% CI: 53-69%] at baseline to 1% [-23 - 25%] at 40-44 weeks. Similarly, hospitalisation estimates declined from 79% [68-86%] at baseline to 60% [41-73%] at 24-28 weeks. These patterns of decline over time were statistically significant. We had too few studies on mortality to synthesise meta-analytically.

Conclusion
Based on the WHO thresholds, baseline levels of VE for the primary series were insufficient against Omicron infections and hospitalisations, and declined further over time. Thus, there is a continued need for behaviour-based COVID-19 prevention measures like mask-wearing and isolating when infected, especially among vulnerable individuals, to achieve global containment of the effects of COVID-19.

Quantifying personal exposure to air pollution among school children in Nairobi: measurement data from homes, schools and outside spaces

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Introduction
Exposure to air pollutants such as fine particulate matter (PM2.5) is common in low- and middle-income country (LMIC) cities. Vehicle and industrial emissions, together with unrestricted burning of rubbish and emissions from burning solid or biomass fuel for cooking lead to PM2.5 concentrations many times higher than the World Health Organisation (WHO) guidance limits. Children are particularly vulnerable to the effects of this exposure. Most studies use fixed-site data from a small number of sites to categorise exposure, but the recent development of low-cost sensors provides the opportunity to gather data at a personal level across different microenvironments including homes, schools, and outdoor areas. This following study aimed to use low-cost air quality monitors to quantify personal PM2.5 exposure of children attending school in two areas of Nairobi: an informal (slum) settlement (Mukuru) and a more affluent residential area (Buruburu).

Methods
PM2.5 concentrations were measured using PurpleAir PA-II-SD monitors attached to powerbanks. Data were gathered every 2 minutes for 24 hours in the homes of 179 children. Measurements were also gathered from 18 schools, and along 41 routes where children walked to school. Time activity and questionnaire data were combined with these measurements to estimate a 24-hour average exposure for each child.

Results
The median (and Inter-quartile range) 24-hour PM2.5 was 29 (18-46)µg/m³ with children attending school in Mukuru experiencing close to double (38 (26-53)µg/m³)) the concentrations of those living in Buruburu (20 (16-30)µg/m³)). The higher concentrations of PM2.5 experienced in Mukuru, can be attributed to greater concentrations within homes and outdoors. PM2.5 concentrations in schools in both communities were similar (15 (13-18)µg/m³)) and provided the cleanest air that children breathed.dult smoker(s) in the home ('trouble breathing'), and living <500m from a major road ('trouble breathing').

Conclusion
Children in Nairobi experience personal exposure to fine particulate matter that is, typically, much greater than the current WHO PM2.5 24h guidance limit of 15µg/m³. Children from informal settlements are exposed to significantly higher (approximately double) concentrations of air pollution than children from more affluent areas of Nairobi. Low-cost sensors provide simple methods to gather data on air pollution across a range of micro-environments and to compare intra-urban differences within cities in sub-Saharan Africa.

"Asthma is a bully disease" – Experiences of patients with chronic lung diseases when negotiating the health system in Cape Town Metro, South Africa

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Introduction
Chronic respiratory diseases are common in Cape Town Metro, South Africa. Yet the experiences of how adults with these diseases, such as asthma or COPD (chronic obstructive pulmonary disease), negotiate the health system are poorly understood. Qualitative methodology lends itself to investigate this gap.

Methods
Semi-structured interviews were conducted with purposively sampled adults who had attended public hospitals with an exacerbation of asthma or COPD. The study was nested in the quantitative "Diagnosing Airways Disease" study. Interviews followed a topic guide around receiving and understanding their diagnosis and treatment, behaviours during an acute flare-up and impacts on daily life. Interviews were conducted in Afrikaans, isiXhosa, or English, transcribed, and translated into English. They were analysed thematically until saturation was reached. Fully informed consent was gained. Ethical approval was given by LSTM and SUN.

Results
32 interviews (16 in Afrikaans, 8 in isiXhosa, 8 in English) were completed in 2022. 17 women and 15 men participated. Most participants were older than 50 years (25/32), and most were unemployed or retired (13/32 and 11/32 respectively).
The identified themes were causes of lung disease, delays in receiving a diagnosis, challenges in accessing healthcare and having limited medicines. Causes included environmental aspects such as air pollution, housing, and occupational exposures. Delays were influenced by self-treatment, restricted investigations, and limited time with health professionals. Challenges included crime, inaccessible ambulances, and exposure to respiratory pathogens in healthcare facilities. Many reported sharing medicines. Many paid privately for medicines or services to overcome perceived shortcomings of the public system.

Conclusion
The identified themes were explored through the lens of "structural violence", where "social structures stop individuals, groups and societies from reaching their full potential" (Galtung, 1969). In Cape Town Metro such structural elements may be scant healthcare professionals, insufficiently enforced policies on e.g., housing or work-place exposures, poverty, crime, and limited government support. This made it difficult for patients to successfully navigate their illness experience and forced some to pay out of pocket to receive better care.

Predictive performance of race- and non-race-based Global Lung Function (GLI) FEV1 equations among Nigerian children aged 6-11 years: a cross-sectional analysis

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Introduction
The widely-used race-based Global Lung Initiative (GLI) spirometric reference equations (Caucasian, African, Asian and Mixed-ethnicity) are increasingly criticised as potentially perpetuating longstanding systemic socio-economic deprivations/inequality; consequently, an additional non-race-based equation (Global) was developed. However, its performance in local populations needs to be evaluated before clinical use because of geographical variations in the socio-economic/nutritional, environmental and genetic determinants of lung function.
Aims/objectives
As no previous study has evaluated this new global equation, we explore its fit, along with that of other GLI equations, to FEV1 data of Nigerian school-aged children.

Methods
Secondary analysis of FEV1 (measured with an electronic peak-flow meter: Asma-1TM, Vitalograph, UK) and anthro-demographic data from a cross-sectional study of the functional capacity of healthy children in Lagos, after excluding those with recent hospitalization or respiratory infections. FEV1 values were converted to z-scores using GLI calculator (http://gli-calculator.ersnet.org/index.html). Goodness-of-fit was defined as mean (SD) z-score of 1.645 Z-scores) and 5% below lower limits of normal (< 1.645 Z-scores).

Results
Data were available from 766 healthy children (46.9% boys) aged 6-11 years [mean (SD) age= 8.9(1.6) years] from 14 primary schools, with 8.6%, 0.5%, 69.7% and 29.8% being stunted, wasted, normal-weight and overweight/obese. The fit of GLI equations were: Global [girls: -1.04 (0.97), 24.1%, 0.5%; boys: -0.87 (0.97), 19.8%, 1.7%); Caucasian [girls: -1.31 (1.03), 78.4%, 0.5%; boys: -1.22 (1.05), 73.8%, 0.3%]; African-American [girls: -0.17 (1.10), 9.1%, 5.4%; boys: 0.03 (1.11), 7.2%, 7.5%]; North-eastern Asian [girls: -1.22 (1.06), 32.2%, 0.7%; boys: -1.43 (1.62), 42.9%, 3.9%]; South-eastern Asian [girls: -0.38 (1.10), 12.3%, 3.9%; boys: -0.53 (1.11), 14.5%, 3.1%] and Mixed [-0.79 (1.10), 19.7%, 2%; boys: -0.68 (1.11), 17.8%, 2.5%]. Fit was independent of nutritional status.

Conclusion
The new global and Caucasian, Asian and mixed GLI equations over-estimated the FEV1 of these urban-dwelling, predominantly well-/over-nourished Nigerian children. Only the African-American equation fitted both sexes, similar to Arigliani et al's finding among children in northern Nigeria. Southeast Asian equation fitted only girls. Further determination of the best equation(s) for our population requires bench-marking of FEV1 and other spirometric variables to disease outcomes.

Assessment of the functional capacity of Nigerian children with sickle cell anaemia using the six-minute walk test

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Introduction
Nigeria has the highest global burden of children with sickle cell anaemia (cSCA) (2% national prevalence). SCA-associated chronic anaemia and hypoxaemia results in impaired functional capacity (FC) [ability to perform daily activities] which is independently associated with poorer outcomes. Hence, periodic monitoring of FC is recommended as part of sickle cell care. Although cardiopulmonary exercise test is the gold-standard measure of FC, it is generally unavailable in low-resource settings because of high cost and expertise; the six-minute walk test (6MWT) is a simpler but reliable and valid alternative measure of FC based on the self-paced distance walked in 6-minutes [six-minute walk distance, 6MWD]. Impaired 6MWD in children with SCD is associated with nocturnal desaturation and silent infarcts. However, there is no published report of 6MWT among cSCA in Nigeria, hence our study.

Methods
We cross-sectionally enrolled cSCA in steady state, aged 6-14 years, at the Paediatric Haematology Clinic of the University College Hospital, Ibadan, Nigeria (January to October 2020) to perform standardised 6MWT (American Thoracic Society's guidelines) on a 30-m long corridor, measuring their 6MWD, pre- and post-test oxygen saturation (pre-SpO2, post- SpO2) and pre- and post-test Borg's perceived dyspnoea and fatigue ratings (pre-dyspnoea, post-dyspnoea; pre-fatigue, post-fatigue). Impaired 6MWD and exercise-induced oxygen desaturation (EOD) were defined as 3%, respectively.

Results
95 children cSCA [48.4% girls; mean (SD) age= 10.2(2.3) years] walked 495 (66.2) m [%predicted 6MWD: 95.9 (14.3) m], with mean (SD) pre-SpO2, post-SpO2, pre-dyspnoea, post-dyspnoea, pre-fatigue, and post-fatigue of 96.3 (2.6) %, 96.3 (2.9) %, 0.2 (0.5) and 1.6 (1.0), respectively (pre-/post-test changes: $p<0.05$). The prevalence of impaired 6MWT and EOD were 2.3% and 11.6%, respectively. Borg's dyspnoea and fatigue scores were significantly associated with EOD ($p<0.05$).

Conclusion
Although the prevalence of impaired FC was low, there was a high prevalence of EOD among Nigerian children with SCD. Because EOD has been previously associated with nocturnal hypoxaemia which is in turn a risk factor for increased morbidity and mortality, there is need for further prospective evaluation of this finding for possible intervention.

COVID-19 Outbreak and Containment among Healthcare workers in a Tertiary Hospital in Nigeria

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Introduction
Globally, health services have been strained due to the crippling effect of coronavirus disease 2019 (COVID-19) pandemic and outbreaks among healthcare workers (HCWs). In most countries in Africa, the unspecific symptoms of COVID-19 are similar to vector-borne conditions such as malaria. Amongst the HCWs, various risk factors for the different cadres abound. This study describes COVID-19 outbreak and containment among HCWs in a Pediatric unit in a tertiary hospital

Methods
This was a retrospective review of outbreak containment effort among HCWs during the second wave of the COVID-19 pandemic between December 2020 and January 2021. It involved all cadres of frontline staff (physicians, nurses and domestic staff) working in the Department of Pediatrics, College of Medicine, University of Ibadan who were eligible for testing according to the NCDC guidelines.1 Demographic, exposure, clinical and laboratory details and outcomes were recorded.

Results
A total of 110 HCWs were included, 53 (48.2%) HCWs were symptomatic, most had body ache (51.9%) and fatigue (51.9%).
A nasopharyngeal swab PCR test for SARS-Cov2 was done by 107 HCWs, 52 (47.3%) were positive, and of these 32 (61.5%) had contact with a confirmed case. Of the positive cases, 37 (70%) were symptomatic, and 15/57 (23.3%) were asymptomatic.
Most cases occurred among house physicians and staff in the newborn unit.
Majority (61.5%) of positive cases had mild illness and no HCW was hospitalized. The outbreak was contained after a period of 8weeks by the following measures: symptom screening, isolation of confirmed cases, contact tracing and environmental decontamination

Conclusion
This study highlights the risk encountered by HCWs and the importance of timely COVID-19 outbreak response in healthcare settings. Contact tracing using level of exposure and/or symptoms is valuable in infection containment. We recommend more awareness of COVID-19 among all cadres of HCWs. We also advocate closer supervision of frontline HCWs with less experience (such as the house physicians) to practice optimal infection preventive measures.

Malignant pleural mesothelioma and environmental and occupational exposure to asbestos: a case report from Lubumbashi, DR Congo

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Patient Description
We present a case of malignant pleural mesothelioma in a 59 year-old man in DR Congo. The relation between exposure to asbestos and malignant mesothelioma has been demonstrated in numerous studies but malignant pleural mesothelioma has not been reported in Sub-Saharan Africa, except for South-Africa and Zimbabwe.

Case History
Patient followed up since February 2019 for dry cough and left chest pain, and left pleural effusion on chest x-ray. He was treated for tuberculosis without bacteriological evidence and underwent several pleural punctions. In May 2019, he was admitted urgently for severe chest pain and referred to us for further advice.
A detailed environmental and occupational history revealed a probably substantial past exposure to asbestos: first as a child in Lubudi, where his father worked in a cement-plant that produced asbestos-cement materials until 1977, and then possibly as an adult through his work as an automobile mechanic (including repairing of brake lining).

Physical Examination Results
Tachycardia and tachypnoea on admission. Dullness and auscultatory silence over the lower third of the left hemithorax.

Results of Pathological Tests and Other Investigations
Chest x-ray showed left pleural effusion and lung atelectasis. Chest HRCT was compatible with mesothelioma in the left lower hemithorax. Spirometry showed a moderate restrictive impairment. Histopathology with immune histochemistry on pleural tissue obtained by needle biopsy confirmed the diagnosis of malignant pleural mesothelioma.

Treatment Plan
Anti-tuberculosis treatment was stopped and antalgic medication was given. No chemotherapy or other oncologic treatment could be offered.

Expected Outcome of the Treatment Plan
Palliative care.

Actual Outcome
The patient died in December 2019 after having developed paraplegia and respiratory distress.

Pulmonary alveolar proteinosis and whole lung lavage in Kenya: a case report

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Patient Description
A 36-year-old previously healthy Kenyan lady who lived in Nairobi and worked as a high-school teacher.

Case History
Our patient was referred and presented with a five-month history of progressive shortness of breath and dry cough with associated unintentional weight loss of 15kg. She was previously healthy and had no history of occupational or inhalational exposure to organic or inorganic dust. There was no history of cigarette smoking or passive smoking.

Physical Examination Results
On examination, she was not pale, had no finger clubbing, cyanosis, or ankle edema, and had no evidence of lymphadenopathy. A respiratory system examination revealed a respiratory rate of 28 breaths per minute. Chest auscultation revealed diffuse bilateral crackles. Cardiovascular, abdominal, and central nervous system examinations were normal.

Results of Pathological Tests and Other Investigations
Laboratory investigations on admission were normal apart from polycythemia and elevated lactate dehydrogenase (LDH). Other investigations to rule out secondary causes were done; the complete blood count and peripheral blood film did not show any morphological evidence of any hematological malignancy. A human immunodeficiency virus (HIV) antibody test was negative. The antinuclear antibody test (ANA) and antineutrophil cytoplasmic autoantibody test (ANCA) were both negative. The Extractable Nuclear Antigen (ENA) panel was also negative. A Gene-Xpert test for Mycobacterium tuberculosis genome detection was negative. An anti-GM-CSF antibody test was not performed because it was not available locally and the cost of sending samples abroad was prohibitive.
A chest radiograph revealed a reticular nodular pattern of bilateral and perihilar distribution. High-resolution computed tomography revealed a "crazy-paving" appearance in the upper, mid, and lower lobes of both lungs with ground glass opacity and smooth interlobular septal thickening suggestive of pulmonary alveolar proteinosis.
A pulmonary function test revealed a restrictive pattern: forced vital capacity (FVC)=2.28L (73 %), forced expiratory volume in 1 second (FEV1) =2L (74 %), and FEV1/FVC= 88%.
Her arterial blood gas (ABG) revealed significant hypoxemia while breathing room air: partial pressure of oxygen (PaO2) 6.2 kPa.
At this point, the working diagnosis was an interstitial lung disease likely pulmonary alveolar proteinosis with differentials of pulmonary alveolar hemorrhage and interstitial pneumonitis.
Cytological examination of the bronchoalveolar lavage fluid (BALF) revealed multiple large and foamy alveolar macrophages and increased numbers of lymphocytes. Microbiological investigation of BALF was negative and cytology showed no malignant cells. The BALF cytology showed periodic acid–Schiff positive (PAS) positive eosinophilic material. A transbronchial lung biopsy revealed intra-alveolar granular material which was also strongly PAS positive. This is consistent with pulmonary alveolar proteinosis.

Treatment Plan
Due to severe dyspnea and hypoxemia on exertion, she was on oxygen therapy and subsequently underwent whole lung lavage in the operation theatre. The WLL was done under general anesthesia. For WLL of her left lung, our patient underwent general anesthesia and was intubated with a double lumen endotracheal (ET) tube of 41 Fr. A total of 7 lavages were done for clearing the lavage effluent from the left lung. Cycles were repeated until 14 L of total lavage volume was used and clear fluid effluent was obtained. The effluent from whole lung lavage gave an initial "milky" appearance with a high sediment level and gradually turned less opaque with a lower sediment level. The procedure lasted approximately 4 hours. No complications were observed during or after WLL.

Expected Outcome of the Treatment Plan
The expected treatment of PAP with whole lung lavage is improvement in hypoxemia and reduced requirement of oxygen.

Actual Outcome
The treatment she received through WLL resulted in marked improvement in her symptoms, exercise desaturation, and subsequent chest radiograph image.
She was put under close observation in the medical critical care unit then transferred to the respiratory ward and was later discharged on day 3 following the procedure with no oxygen requirement.
Whole lung lavage of the contralateral lung was performed 6 weeks later but unfortunately, the patient succumbed immediately post-procedure. A postmortem was performed and revealed asphyxia due to widespread alveolar proteinosis as the cause of death.

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