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The use of propofol for sedation in medical thoracoscopy

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Introduction. Propofol has been shown to be safe for sedation during flexible bronchoscopy, but data for its use in medical thoracoscopy are limited.

Objectives. We initiated a multicentre randomised study, to compare both the safety and adequacy of medical thoracoscopy performed with two different conscious sedation regimens (midazolam/fentanyl v. propofol/fentanyl) administered by a non-specialist anaesthetist.

Methods. Either propofol or midazolam was given in boluses. Fentanyl was used in all. Procedure time, complications and patient discomfort were defined and documented. The adequacy of the sedation according to the endoscopist and recovery time were measured.

Results. We enrolled 38 patients (mean 67.5 (standard deviation (11.9)) years, 23 males), with 18 patients randomised to propofol and 20 to midazolam. We observed no differences in procedure time (37.6 v. 36.2 min, p=0.57), recovery time (20.1 v. 20.8 min, p=0.86), or adequacy of sedation as perceived by the endoscopist (p=0.73). There were, however, 10 adverse events observed in the propofol group compared with 4 in the midazolam group (p=0.04). Adverse events in the propofol group included desaturation responsive to supplementary oxygen (n=6), desaturation requiring temporary bag valve ventilation (n=1), hypotension requiring intravenous fluid resuscitation (n=2) and the need to abort the procedure (n=1); this compared with the midazolam group which included desaturation responsive to supplementary oxygen (n=3) and hypotension not requiring intervention (n=1).

Conclusion. Propofol is not the drug of choice for sedation during medical thoracoscopy, given the increased risk of complications.

Inhaler technique in an urban pulmonologist population group

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Objective. To prospectively evaluate the use of inhaler therapy, primarily focusing on the origin of the initial inhaler training and the effects of regular monitoring of inhaler use.

Methods. We conducted a prospective study on 200 consecutive adult patients using either an metered-dose inhaler (MDI) or dry-powder inhaler (DPI) in a pulmonology practice, for the treatment of asthma, chronic obstructive pulmonary disease (COPD) or asthma-COPD overlap syndrome (ACOS). The data apply to a single evaluation episode per patient and no patients were evaluated twice. Each patient was assessed by J Vanderwagen irrespective of their previous teaching.

Results. Overall, 45% of MDI technique was adequate whereas 79% of DPI technique was found to be adequate (p<0.001). When initial MDI teaching was performed by family members, general practitioners, hospital staff, pharmacy staff and self, inadequate technique was found (p<0.05). Similarly, inadequate technique was seen in the DPI group when taught by family members, general practitioners, hospital staff and pharmacy staff (p<0.001). Initial teaching in a specialist or pulmonology practice showed 100% adequacy. A total of 59% of the patients using DPI were using the Accuhaler, and 41% the Turbuhaler; however, the percentage of inadequate inhaler technique in the Accuhaler was 28%, while the percentage of inadequate inhaler use in the Turbuhaler group was lower, at 10% (p<0.001).

Conclusions. Inhaler technique was shown to be suboptimal. There was no correlation in the duration of inhaler use and technique. Patients initially taught by specialists and pulmonologists showed superior technique. DPI technique was found to be superior to MDI technique. In comparing two DPI devices, it was found that although the Accuhaler was more widely used (68% Accuhaler v. 32% Turbuhaler), Turbuhaler technique was superior to Accuhaler (Turbuhaler 90% adequate and Accuhaler 72% adequate).

The microbiome in children with HIV-associated bronchiectasis: A cross-sectional study

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Objective. To determine the lung microbial community in HIV-associated bronchiectasis (BX) and its impact on exacerbations.

Methods. We conducted a cross-sectional study of 26 children (68% male; mean age 10.8 years) with BX and a control group of 6 children with cystic fibrosis (CF). A total of 32 samples were collected, with 1 during an exacerbation (n=8 BX and n=3 CF). Sputum samples were processed with 16S rRNA pyrosequencing.

Results. The average (standard deviation) number of operational taxonomic units (OTUs) detected among BX samples was 298 (67), with 434 (90) for CF. The relative abundance of Proteobacteria was higher in BX (72.3%) compared with CF (40.1%). The average relative abundance of Firmicutes was higher with CF (49.0%) v. BX (22.2%). Higher within-community heterogeneity was associated with CF (H'=5.39 (0.38) and 1 – D=0.99 (0.00)) than with BX (H'=4.45 (0.49) and 1 – D=0.96 (0.04)). The bacterial assemblage of exacerbation samples was not significantly different from non-exacerbation samples for either disease groups (ANOSIM R=0.050, RBX=0.082, RCF=–0.083; p>0.05). In the BX group there was no correlation between FEV_1% or $FEF_{25/75}$% and predominant community (R=0.154, p=0.470 and R=0.178, p=0.403), respectively.

Conclusion. Microbial diversity is lower in BX and level of immunosuppression does not affect this. Exacerbations did not affect community diversity levels.

An analysis of outcomes in children with cystic fibrosis in a tertiary African centre: A retrospective study

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Background. Cystic fibrosis (CF) is a common genetic disorder in whites that has become increasingly prevalent in populations of African descent. The clinical presentation in African children with CF is commonly related to nutritional and growth abnormalities.
Objective. To describe clinical, laboratory and spirometric characteristics of children followed up at the CF Clinic at Inkosi Albert Luthuli Central Hospital, Durban, South Africa.
Methods. A retrospective chart review of clinical, laboratory and spirometric data of patients registered from January 2013 to January 2016 was conducted.
Results. The data were reviewed for 15 patients (mean age 132 months, range 26 - 219 months), with 53% males. A total of 60% of these children were white, and 26.7% were of black African descent. Collectively, the mean age of diagnosis was 45 months (range 0 - 156), although this was higher in the non-whites (at 104 months, range 48 - 156) v. 1.3 months (range 0 - 3) in whites. The white group had better nutritional status when compared with non-whites, with BMI 17.2 kg/m^2 v. 14.5 kg/m^2, respectively. Age at diagnosis had a negative correlation with weight-for-age *z*-score (–0.61, $p<0.05$) and BMI (–0.54, $p<0.05$). The mean FEV_1% predicted was 70.0 (range 16.1 - 120.2). FEV_1% predicted had a positive correlation with both weight z-score (0.83; $p<0.001$) and BMI (0.59; $p<0.05$). Chronic *Pseudomonas* infection occurred only in two patients, both of whom were above the age of 16 years. On mutational analysis, five of the non-white patients had no mutations identified on the 30 panel mutation used for testing. *phelF508.del* was the most commonly identified mutation in whites, with four homozygotes and four heterozygotes.
Conclusion. Cystic fibrosis is diagnosed late in non-white children in South Africa, affecting their growth and lung functions. There is a need for a genetic panel that includes mutations specific to children of African descent.

Haemoptysis in patients with HIV and immunocompetent patients with aspergillomas

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Objective. To contrast the presentation of HIV-positive and HIV-negative patients presenting with haemoptysis due to aspergillomas.
Methods. A retrospective study was conducted of 89 inpatient medical records of patients presenting with haemoptysis due to aspergillomas, referred to the pulmonology unit at Chris Hani Baragwanath Academic Hospital, Soweto, between 2006 and 2012.
Results. Of the 89 patients, 44 (49%) were HIV-positive and 45 were HIV-negative. A total of 9 (20.4%) HIV-positive patients presented with minor haemoptysis (1 - 150 mL/24 h), 25 (57%) with moderate haemoptysis (150 - <500 mL/24 h) and 10 (22.7%) with massive haemoptysis (>500 mL/24 h). In the HIV-negative group, the distribution of severity of haemoptysis was 6 (13.3%) minor, 32 (71.1%) moderate and 7 (15.5%) massive ($p=0.37$). A total of 5 (11%) of the HIV-negative patients were admitted for repeat haemoptysis, while 6 (13%) of the HIV-positive group presented with repeat haemoptysis. Bronchial artery embolisation (BAE) was performed in patients who presented with massive haemoptysis or in those whose haemoptysis worsened. In the HIV-positive group, 11 (25%) had a BAE and 6 (13.6%) patients had blood transfusions. In the HIV-negative group, 11 (24%) had a BAE and 3 (6.6%) were transfused ($p=0.23$). In the HIV-positive group, 43/44 patients had a CD4 count measured: the mean CD4 was 291 cells/mm^3. The mean CD4 counts in the severity categories were: minor CD4 231 cells/mm^3, moderate 294 cells/mm^3 and massive 332 cells/mm^3 ($p=0.55$). In the HIV-positive group there were 4 deaths, while there were 3 deaths in the HIV-negative group ($p=0.65$).
Conclusion. There was no significant difference in HIV-positive v. HIV-negative patients presenting with haemoptysis with aspergillomas.

Spectrum and determinants of lung function in HIV- infected adolescents on antiretroviral therapy in Cape Town, South Africa

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Introduction. Over 90% of HIV-infected children live in sub-Saharan Africa. Although lung disease is very common, there is limited information on the spectrum and determinants of chronic lung disease in HIV-infected adolescents and the impact of antiretroviral therapy (ART).
Objective. To investigate lung function in HIV-infected adolescents on ART in Cape Town, South Africa, in a prospective, longitudinal cohort: the Cape Town Adolescent Antiretroviral Cohort (CTAAC).
Methods. HIV-infected adolescents aged 9 - 14 years with at least 6 months of ART and enrolled in the CTAAC underwent lung function testing. Spirometry, single-breath carbon monoxide diffusion test, forced oscillation technique, nitrogen multiple breath wash-out and 6-minute walk test were done at enrolment. Demographic and clinical parameters were also collected. Appropriate statistical tests were used.
Results. A total of 515 HIV-infected adolescents and 110 HIV-negative controls were enrolled. The mean (SD) age was 12 (1.6) years; 52% were male. HIV infection was significantly associated with lower lung function outcome after adjusting for age, sex and height. HIV infection was associated with a lower carbon monoxide transfer factor (TLCO) compared with HIV uninfected (95% confidence interval (CI) –1.20 - –0.01; $p=0.0048$), lower forced expiratory volume in 1 second (FEV_1) (95% CI –0.20 - –0.05, $p=0.001$), lower functional residual capacity

(FRC) (95% CI –0.20 - –0.04, p=0.004) and lower compliance (95% CI –0.011 - –0.005, p<0.001). Pneumonia and previous tuberculosis (TB) were significantly associated with lower FEV_1 (n=461, 95% CI –0.18 - 0.04, p=0.001 and n=426, 95% CI –0.13 - –0.004, p=0.037, respectively). ART duration was significantly associated with FEV_1 (n=486, 95% CI –0.024 - –0.004, p=0.006).

Conclusion. HIV-infected adolescents on ART have significantly lower lung function than matched HIV-negative adolescents. ART duration and history of past respiratory illnesses were significantly associated with lung function outcomes.

Behcet's disease: A case of multisystem disease

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Introduction. Behcet's disease (BD) is a multisystem, multiorgan disease, with complex clinical manifestaions. BD may present with cutaneous, neurological, pulmonary, vascular, gastrointestinal, genitourinary and rheumatological manifestations. The most important feature of BD is a widespread vasculitis that involves both arteries and veins of all sizes.

Case report. A previously well 12-year-old girl presented with a history of right-sided pleuritic chest pain, shortness of breath, coughing, abdominal pain, abdominal distension and anorexia for 2 weeks. Chest X-ray revealed a massive right-sided pleural effusion. Septic markers were not suggestive of infection. HIV testing was negative, as was testing for tuberculosis and auto-immunity. A pleural biopsy revealed non-caseous granulomata. Computed tomography scan documented multiple thrombi in small, medium and large vessels. The most significant thrombus formation was in the right internal jugular vein and the right subclavian vein. The thrombi extended into the sigmoid and transverse sinuses. Multiple lymph nodes were present in the mediastinum and abdomen. Biopsy results of the lung revealed a marked capillaritis, vasculitis, arteritis, involving vessels of various sizes. Histology was compatible with BD.

Pulmonary hydatid disease at Inkosi Albert Luthuli Central Hospital: A case series

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Background. Hydatid disease is a parasitic infection caused by a tapeworm of the genus *Echinococcus*. In humans, *Echinococcus granulosus* is responsible for causing cystic disease. There has been a rise in the incidence of pulmonary hydatid disease in South African children, and most cases require surgical management, which is usually associated with significant morbidity.

Objective. To report on the different presentations of pulmonary hydatid disease in children referred to Inkosi Albert Luthuli Central Hospital (IALCH).

Methods. A retrospective chart review of clinical, laboratory and radiological data of paediatric patients with pulmonary hydatid cysts admitted to IALCH between January 2015 and December 2015 was conducted.

Results. A total of 10 patients were reviewed; 80% were males and 20% were females. The mean age at diagnosis of lung disease was 8.0 (range 4.0 - 12.5) years. There was an average (standard deviation) delay of 6.1 (5.5) months between first presentation of lung disease and actual diagnosis of hydatid disease. All the patients were from the Eastern Cape: 70% were from Mthatha, 20% from Tsolo and the remaining 10% from Libode area. A total of 7/10 patients reported exposure to dogs, sheep or cattle. Overall, 70% had positive indirect haemagglutination assay (IHA) and 55% had positive eosinophilia. There was no correlation between IHA and eosinophilia (p=0.193). There was correlation between delay in diagnosis and the IHA or eosinophilia results (p=0.58). In terms of anatomical localisation, the number of cysts in the right or left lung was similar, with 40% in the right, 40% in the left and only 20% with bilateral disease. Of the 2 patients who had bilateral disease, 1 had extrapulmonary cysts in the liver and spleen. Overall, 70% required surgical management. The mean length of intensive care unit stay was 2.6 (range 0 - 6) days.

Conclusion. Hydatid lung disease is still common in the Eastern Cape of South Africa, with the majority of children exposed to known risk factors. Despite this knowledge, there is a significant delay in diagnosis of hydatid pulmonary cysts.

An unusual case of an anterior mediastinal mass in a child with cystic lung disease

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Introduction. Langerhans histiocytosis (LCH) is a rare disease that is characterised by monoclonal proliferation of dendritic cells. We describe a rare example of multiorgan (lungs, skin and bone marrow) LCH presenting with an anterior mediastinal mass, cystic lung disease and typical skin features.

Case report. A 7-month-old, HIV-unexposed male of a mixed-race ethnicity, presented with a 6-day history of progressive shortness of breath and increased work of breathing. Examination revealed a hyperpigmented papular vesicular rash with a symmetrical distribution mainly in the trunk, groin, neck, scalp and both the hands and feet. The chest radiograph showed multiple cystic lesions with a possible mediastinal mass that filled the right hemithorax on the frontal projection, while the computed tomography scan demonstrated a heterogeneous enhancing large anterior mediastinal mass. Punch biopsies of skin were in keeping with a diagnosis of Langerhans cell histiocytosis. The bone marrow trephine biopsy was very cellular and demonstrated morphological and immunohistochemical features suggestive of involvement by Langerhans cells/Langerhans cell histiocytosis.

Discussion. The presence of an anterior mediastinal mass with cystic lung disease is rare but highly suggestive of LCH. LCH is part of a spectrum of histiocytic disorders, and is divided into three classes. It is most common in children between 1 and 4 years of age, with

a peak incidence of about 0.1 - 1 per 100 000 children. Symptoms range from asymptomatic (with infiltrations noted on chest X-ray) to severe symptomatic respiratory disease. These may be nonspecific and include dyspnoea, cough, chest pain, wheezing, fatigue or tachypnoea. Chest pain may be associated with a pneumothorax. Treatment protocols are based on whether there is single or multi-organ involvement. Children who present at a younger age with multisystemic disease have a high mortality.

Effects of early-life pneumonia on lung function in the first 2 years of life in black and mixed-race African infants

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Background. Infection in the first year of life in African infants has been shown to result in lower lung function at 1 year. It is unknown if this effect persists.
Methods. Infants enrolled in the Drakenstein Child Health birth cohort had lung function tested at ages 6 weeks, 1 and 2 years.
Results. A total of 182 children were tested both at 6 weeks, 1 year and 2 years of age. Lung function was tracked from 6 weeks through to 1 and 2 years. Pneumonia during the first 2 years of life was independently associated with decreased tidal volume (average 2.62 mL lower, 95% confidence interval (CI) –4.15 - 1.09) and increased respiratory rate (average 5% higher, 95% CI 1.02 - 1.08). This effect on respiratory rate was stronger if the pneumonia incidence occurred within the first year of life (average 5% higher, 95% CI 1.02 - 1.09), but tidal volume was more affected if pneumonia occurred in the second year of life (average 3.57 mL lower, 95% CI –6.6 - –0.54). The effect on tidal volume at 2 years of age was stronger if the infant required hospitalisation (average 2.17 mL reduction, 95% CI –4.22 - –0.11).
Conclusions. Early-life pneumonia results in lower lung function at 2 years of age, an effect independent of baseline lung function. Preventing early-life pneumonia will help optimise early lung growth and function as well as strengthening respiratory health in later childhood.

Overnight oximetry as a screening tool for moderate-severe obstructive sleep apnoea in children in a resource-constrained setting

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Introduction. Obstructive sleep apnoea (OSA) is common in paediatrics yet often overlooked, as symptom-based screening is unreliable. Polysomnography is regarded as the gold standard for OSA diagnosis, but its utility in resource-constrained settings is limited. Overnight oximetry and the McGill score is a validated screening tool for moderate-to-severe OSA.
Objective. To describe the spectrum of OSA severity in children referred for overnight oximetry at RCWMCH, and report the impact of overnight oximetry on management of children with suspected OSA.
Methods. A retrospective descriptive study was conducted of patients screened for OSA by overnight oximetry at RCWMCH from December 2012 to December 2014. Clinical data were retrieved from the oximetry database and medical records. Recordings of 6 hours or more were considered adequate and included in the study. OSA severity was determined using the McGill score. Details on management and outcome were documented.
Results. A total of 153 patients were studied; 99 (65%) were males and median age was 31.6 months (interquartile range (IQR) 15.8 - 61.1). A total of 123 (80%) patients presented with history of snoring, 85 (56%) reported apnoea and 19 (12%) a history of frequent awakenings. A further 107 (70%) patients reported hyperactivity during the day. Risk factors for OSA included obesity (10%), facial abnormalities (17%), cerebral palsy (7%), Down syndrome (9%), prematurity (10%), and neuromuscular disorders 23 (15%). McGill's score classified patients as no/mild OSA (n=65 (42%)), moderate OSA (n=25 (16%)), severe OSA (n=25 (16%)) and very severe OSA (n=38 (25%)). Eighty-five (56%) patients were referred for surgery and 35 (23%) had urgent surgery. The median time to surgery was 15 days (IQR 5 - 110).
Conclusion. Overnight oximetry is a simple and useful tool to assess severity of OSA and prioritise appropriate management in the setting of the South African public health system.

Evaluation of the knowledge and correct use of metered-dose inhalers by healthcare professionals and medical students in Gauteng

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Introduction. Incorrect use of metered-dose inhalers (MDIs) accounts significantly for poor disease control in asthma and chronic obstructive pulmonary disease (COPD). Knowledge and application of the correct inhaler technique by both patients and their healthcare providers are essential to minimise morbidity and mortality.
Methods. Data for this study were collected prospectively by administering a questionnaire to doctors, nurses and final-year medical students at Helen Joseph Hospital and Chris Hani Baragwanath Academic Hospital in the Departments of Internal Medicine, Emergency Medicine and Pulmonology. The questionnaire gauged their perceptions and level of knowledge of MDI technique. In addition, study participants were requested to demonstrate their inhaler technique using a placebo inhaler device. Use of the MDI was evaluated using a scoring system, whereby one point was allocated to each of the six sequential steps mandatory for correct technique.
Results. The total sample of 195 participants comprised 130 females (67%) and 65 males. Of these, 133 (68%) were qualified medical staff, and 62 were final-year medical students. Overall, only 16% demonstrated adequate MDI technique. There was no difference between medical students and qualified medical staff regarding their knowledge of MDI technique (p=0.5243). Fifty-seven per cent of participants did not demonstrate MDI technique to patients, or check their inhaler technique in clinical practice. There was no relationship between knowledge of correct MDI technique and the healthcare

providers' practice of demonstrating (p=0.0728) and/or observing patients' inhaler technique (p=0.1564).

Conclusions. Healthcare professionals and final-year medical students have poor knowledge of inhaler technique and are ill-prepared to teach patients. Also of concern is that the majority do not routinely demonstrate or observe patients' inhaler technique.

Eosinophilic pneumonia: A case report

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Case report. A 20-year-old man was referred to Chris Hani Baragwanath Academic Hospital in March 2015 with a 2-week history of cough, fever, dyspnoea, weight loss and night sweats. He denied any history of chest pain, wheezing, asthma, skin rash, joint pain, sinusitis, allergies, drug ingestion, travel history or residence in a rural area. He admitted to a brief period of tobacco smoking. Physical examination was unremarkable, except for severe respiratory failure. The chest X-ray and high-resolution computed tomography scan showed diffuse ground-glass opacification. The initial clinical suspicion was that of pneumocystis pneumonia. However, HIV serology and PCR were negative. Sputum analysis was unhelpful. The full blood count, urea and electrolytes, 1,3β-D-glucan, ANCA, ANA, ACE and stool examination were normal. Serum total IgE was raised (265 kU/L). Abdominal ultrasound examination was normal. During his hospital admission he developed a spontaneous left pneumothorax, which required intercostal drainage. An open lung biopsy showed features of eosinophilic pneumonia. High-dose corticosteroids failed to produce any clinical improvement; however, there was a definite clinical response to 2 cycles of intravenous cyclophosphamide. He was then lost to follow-up, but traced in May 2016. He is significantly better, and able to perform activities of daily living while using domiciliary oxygen intermittently.

Discussion. This is an unusual case of idiopathic eosinophilic pneumonia as there was no significant response to corticosteroids. As a last resort, cyclophosphamide was administered, resulting in definite clinical improvement. We were unable to find any similar case in the literature. Follow-up of this patient will be continued with great interest.

The prevalence and management of rifampicin-resistant tuberculosis at Chris Hani Baragwanath Academic Hospital

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Introduction. Pulmonary tuberculosis (TB) causes a substantial burden of disease in sub-Saharan Africa and worldwide. In 2014 the WHO reported approximately nine million new cases of TB in 2013 globally. Of the new TB cases reported, there were approximately 480 000 cases of multidrug-resistant (MDR)-TB. Drug resistance remains a significant hindering factor in the management of TB worldwide. The implications are numerous, comprising poorer patient outcomes, cost implications, disease complications and mortality.

Objective. To describe the prevalence and management of rifampicin resistance diagnosed at Chris Hani Baragwanath Academic Hospital during a 2-year period, using variables including the presence of HIV co-infection, previous TB history, clinically relevant laboratory tests, drug therapy used and mortality rate.

Methods. The study design is a retrospective cross-sectional descriptive study assessing patients with rifampicin-resistant tuberculosis confirmed on GeneXpert test and whether adequate treatment was instituted compared with the recommended national guidelines. A total of 70 participants' inpatient files were reviewed and the relevant data were extracted. Descriptive statistics were used.

Results. The prevalence of rifampicin-resistant TB during the 2-year period was 9.7%. The prevalence rates were 3.05%, 2.63% and 4.02% for rifampicin-monoresistant (RMR)-, MDR- and 'not classified' TB, respectively. The patients were on average 36 years old. Overall, 83% of participants were co-infected with HIV and had an average CD4 count of 91 cells/mm^3, and 59% of patients had a history of previous TB, of which 90.2% had completed their treatment regimens. The average time take to obtain the GeneXpert result was 3.36 days post admission. The response to the submission of confirmatory tests was poor, with only 60% of line probe assay and 25.7% of drug susceptibility testing tests being submitted. Only 59% of patients were on appropriate drug therapy following their diagnosis, and there was an 18.6% mortality rate.

Conclusion. There still remains a significant burden of disease with drug-resistant TB, which is compounded by the HIV epidemic. National departmental guidelines have been designed to aid in controlling the problem, but this study demonstrates that there is poor implementation and adherence to the guidelines. Educating healthcare providers with current guidelines and management tools (confirmatory tests, drug therapy and referral systems) is essential to help minimise the burden of disease.

Factors affecting compliance and control of asthma at the Division of Pulmonology, Chris Hani Baragwanath Academic Hospital: A prospective study

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Introduction. Less than half of asthmatic patients at the Respiratory Outpatient Department (ROPD), Chris Hani Baragwanath Academic Hospital (CHBAH), are well controlled, despite very few admissions or exacerbations in the previous year.

Objectives. To describe the cohort of patients, in terms of personal health history, comorbidities and indicators of asthma severity and control, and to describe the factors influencing control of asthma, hoping to identify factors that could be addressed to improve control in the defined cohort.

Methods. This study was a prospective analysis of asthmatic patients attending the ROPD at CHBAH, who presented for scheduled outpatient visits. Data collected included demographics, spirometry, symptoms, treatment, severity and control of asthma.

Results. Of 137 patient files reviewed, 89% were female. The mean (SD) age was 51.49 (0.14) years. Only 32.12% of patients were well controlled. Common triggers for asthma included passive smoking (34.3%), house dust mites (32.8%) and other (36.5%). While 86.9% were assessed as being adherent to treatment, 44.5% of the cohort did not receive all medications prescribed by the doctor. Mistakes in inhaler technique were made in 46% of the patients, with the most common (16.1%) being not breathing in slowly and deeply after dispensing medication from the canister. Steps omitted in inhaler technique were associated with intensive care unit admissions (p=0.022).
Conclusion. In this population of mostly middle-aged female asthmatics, less than half the patients were well controlled, with two contributing factors being poor inhaler technique and patients not receiving all medications prescribed. These factors are avoidable, and every effort should be made to rectify them to improve control in this population.

First rib resection by VATS

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First rib resection for outlet obstruction is an operation that should only be performed when medical therapy fails. The supraclavicular and transaxillary approaches are currently the most commonly utilised approaches. Technically, both approaches are difficult, with potential brachial plexus and vascular injuries. video-assisted thoracoscopic surgery techniques have been proposed that give superior visualisation and exposure, and simplify the risk attached to the operation. I will report on my first two cases with a review of the literature, describing the technique and the potential complications.

Aetiology of pleural effusion – an African perspective

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Objective. To evaluate the common causes of pleural effusion in an African context.
Methods. We conducted a retrospective study at Dr George Mukhari Hospital (a tertiary teaching hospital), Pretoria, South Africa, investigating the aetiology of pleural effusion among patients admitted to the Cardiothoracic Unit during a period of 2 years (2010 - 2012).
Results. Of the 237 patients admitted, records of 120 patients were available for study, of which 50 were incomplete and excluded from analysis. We analysed 70 patients' data and found that in 72%, pleural effusion was due to tuberculosis (TB), in 17% malignant causes and in the rest nonspecific pleuritic. Of the malignant aetiologies, a high percentage (40%) was due to mesothelioma.
Conclusion. TB was found to be the most common cause of pleural effusion in our patients, in line with studies published from other African countries but different from Western countries. We also found a high percentage of malignant pleural effusions due to mesothelioma.

Principles of open surgery

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It will be prudent to remember that it is as a consequence of the principles of open cardiothoracic surgery that the foundation for the meteoric rise in video-assisted thoracoscopic surgery (VATS) has been established. It is imperative that every surgeon practising VATS has the ability to safely convert to an open procedure. The principles of open surgery start with meticulous patient selection, as this is fundamental for good outcomes. Surgical selection considers the indication for surgery, cardiorespiratory function and radiological investigations. Intraoperative principles include: aspects of anaesthesia (type of anaesthesia, analgesia and lung isolation); and the type of surgical incision and surgical dissection (lung, vascular and mediastinal lymph nodes). In addition, principles for surgery for bronchial carcinoma and inflammatory lung disease – most notably that of lung resection for cavitatory disease both for active and sequelar TB – should be noted. Postoperative pain control is key to rehabilitation and resumption of normal function.

Massive haemoptysis

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Current consensus advocates bronchial artery embolisation (BAE) as the initial form of therapy for massive haemoptysis with radiologically localised disease, even if emergency lung resection is deemed suitable. Massive haemoptysis has been associated with an extremely high mortality. Death is usually due to asphyxiation rather than exsanguination. Conservative management of massive haemoptysis has a mortality of 50 - 100%. Mortality rates for surgery for massive haemoptysis vary between 7 and 18% .This increases up to 40% when emergency surgery is undertaken in the presence of active haemoptysis. Mortality is not affected by the aetiology, tuberculosis activity, lack of therapy, age or sex of the patient. The most significant factor influencing outcomes is soiling or aspiration involving the contralateral normal lung. BAE may be used either as a temporising measure or definitive therapy. When used as a temporising measure, it is thought to allow sufficient time for adequate resuscitation of the patient and clearing of blood from the bronchial tree prior to lung resection. However, up to 20 - 45% of patients have recurrent haemoptysis within the first month following BAE.

Avoiding barotrauma in the operating theatre: Non-intubated thoracotomy

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Barotrauma is an avoidable but poorly recognised complication of intraoperative ventilation. I will be presenting my early experience of my cases, with the potential complications. In thoracic surgery, the gold standard is use of the double-lumen endotracheal tube. This is often complicated by incomplete collapse of the operated lung and incorrect positioning, and often takes a considerable amount of time to position, even with the use of an intubating bronchoscope. With adequate modern anaesthesia it is possible to perform complex procedures such as a video-assisted lobectomy without the need of an endotracheal tube. This avoids the trauma of intubation, the

complications of barotrauma and often gives better collapse of the lung than with the standard double-lumen approach.

Surgical management of mediastinal compression caused by massive retrosternal goiter with cardiopulmonary bypass: A case report

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Introduction. Most goiters grow slowly and are asymptomatic. Compressive symptoms appear late but can be life-threatening, especially during surgery. Complete airway obstruction and cardiovascular collapse can occur during the induction of general anaesthesia, as intubation of the tortuous, compressed trachea is difficult. Also, positive pressure ventilation increases pre-existing superior vena cava obstruction, resulting in cardiovascular collapse. Surgery of compressive thoracic masses on the mediastinum is challenging. Cardiopulmonary bypass (CPB) facilitating the excision of tumours is controversial.
Case report. A 56-year-old obese male presented with intermitted haemoptysis. He had dyspnoea, hoarseness and dysphagia. He was known to have hyperthyroidism and had had a previous partial thyroidectomy. Comorbid diseases included hypertension and obstructive sleep apnoea. Imaging revealed a superior mediastinal mass displacing the trachea, and mediastinal vasculature and severe tracheal narrowing. Histological diagnosis after computed tomography-guided biopsy was that of normal thyroid tissue. In theater, awake-intubation with flexible bronchoscope was attempted, but it failed owing to the narrow, displaced trachea. Using a femoral block, the femoral vessels were cannulated while the patient was sedated in a semi-supine position. Another attempt at intubation after initiation of CPB failed. Retrosternal goiter was removed via sternotomy and the patient was intubated.
Discussion. Retrosternal goiter should be treated in both symptomatic and asymptomatic patients to prevent rapid deterioration and airway obstruction. Medical treatment is unsuccessful for goiter post thyroidectomy. Surgery is high risk due to decompensation at induction and difficult airway management. CPB is used in thoracic surgery for tracheal resection and reconstruction and if masses are adherent to or infiltrating the great vessels. The role of CPB in critical lower airway obstruction is controversial. CPB is the ultimate solution to the 'impossible airway'.

Peptide receptor radionuclide therapy as a novel treatment for malignant mesothelioma: Case reports

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Introduction. Malignant pleural mesothelioma (MPM) is a fatal disease. The prognosis is modestly influenced by conventional oncological treatments. MPM is a radiosensitive tumour, but external beam radiation therapy is not used owing to the problem of irradiating normal lung tissue. Targeted radionuclide therapy delivers the maximum possible radiation dose to the tumour while sparing healthy tissues. Theranostics allows for the diagnosis and therapy of malignancies by the substitution of a radioisotope used for imaging (Gallium-68) with one used for therapy (Lutetium-177). Uptake of a diagnostic tracer will determine whether a patient will benefit from peptide receptor radionuclide therapy (PRRT).
Case report. Patient X (53-year-old female) and patient Y (55-year-old male) both presented with dyspnoea from pleural effusion. Both patients had a known asbestos exposure history. Histological diagnosis of sarcomatoid mesothelioma was made in patient X, and patient Y was diagnosed with epitheloid mesothelioma. Both patients underwent a Ga-68-NOTA-ANG positron emission tomography-computed tomography study, which demonstrated increased tracer accumulation in the pleura. The intensity of the uptake in the pleura exceeds that of the liver, which predicts a favourable response to therapy, when substituting Gallium-68 with a therapeutic isotope such as Lutetium-177.
Discussion. Surgery, chemotherapy and radiotherapy fail to improve the life expectancy of patients with MPM. The appeal of PRRT lies in the reduced toxicity owing to the affinity for specific receptors or certain tissues, which results in the maximisation of the effect where it is needed. Receptor-mediated endocytosis of radiolabelled peptides is important, as radionuclides emitting therapeutic particles have very short path lengths, and are only effective over a short distance from their target DNA. These cases indicate that PRRT might be a treatment option in future in patients with MPM.

Mediastinal tumours

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Mediastinal tumours represent a wide range of disease states. The location and mass composition have important implications for diagnosing mediastinal masses. Common causes of anterior mediastinal masses include the following: thymoma, thyroid disease, teratoma and lymphoma. Masses of the middle mediastinum are typical congenital cysts, while those from the posterior mediastinum are often neurogenic in nature. Clinical presentation can range from being asymptomatic to causing pain, cough and dyspnoea. The likelihood of malignancy is influenced primarily by mass location, patient age and the absence or presence of symptoms. Chest radiograph and computed tomography scanning as well as biochemical studies can identify and characterise mediastinal masses, but a tissue diagnosis is almost always required to complete the diagnosis.

Resection of tumours of the chest wall: Durban experience

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A talk on tumours of the chest wall would be incomplete without a tribute to Prof. B le Roux, the founder of our unit in Durban, and his pioneering work on the use of acrylic sandwich for chest wall reconstruction. Our work encompasses primary chest wall tumours, secondary chest wall involvement, usually due to underlying

pulmonary pathology, and pseudo-tumours of the chest wall, of which tuberculosis is the most common. While most diseases seen during Prof. Le Roux's time have not changed, the surgical techniques to reconstruct the chest wall, availability of newer prosthetic materials and use of myocutaneous flaps have allowed us to resect larger sections of chest wall and safely get adequate cover. We will discuss chest wall resections and the 10 years' experience with chest wall resections in our unit.

Comparison of outcomes between primary and secondary lung decortication in patients with empyema thoracis, admitted to Dr George Mukhari Academic Hospital

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Background. We examined all the patients with empyema thoracis admitted in our unit to compare the outcomes between primary and secondary lung decortication. The primary decortication was defined as a primary procedure, without prior attempt of pleural space evacuation with either chest tube or previous decortication. Secondary decortication was defined as decortication following failed lung expansion after initial pleural space drainage or after failed primary decortication. Anecdotally, secondary decortication is associated with increased complications including prolonged length of hospital stay due to respiratory complications or wound complications, compared with primary decortication. From a literature search, there is currently no study that directly compares outcomes of these two procedures, hence it was interesting study on which to embark.

Methods. We included all patients who presented to our unit with empyema thoracis from 1 January 2011 to 31 December 2014 in a retrospective, quantitative, descriptive study. In this study, 32 patients were analysed with a male:female ratio of 1:1. Thirteen patients underwent primary decortication and 19 underwent secondary decortication. A combination of both sequential and random sampling was used. We compared the postoperative outcomes of the two groups. The Fisher exact test was used to compare percentages, including the rates of complications between primary and secondary decortication. Mean values were compared using the *t*-test. The frequency of other variables was also determined.

Results. There was significant statistical difference in length of hospital stay (intensive care unit (ICU) and ward) and complications between patients who underwent primary v. secondary decortication. The primary and secondary decortication mean (standard deviation) values for days spent in ICU were 2.21 (0.43) days and 2.84 (1.07) days, respectively ($p<0.029$). The mean values for days in the ward between two groups were 2.79 (1.31) days and 4.05 (1.78) days, respectively ($p<0.032$). There was no statistical difference in terms of age, CD4 (only for HIV patients) and adenosine aminase (ADA) between patients who underwent primary against secondary decortication. The primary and secondary decortication mean values for age were 40.0 (11.66) years and 33.4 (10.34) years ($p<0.094$). The mean values for CD4 count (HIV-positive patients) between the two groups were 312.8 (227.13) cells/mm^3 and 244.20 (168.39) cells/mm^3 ($p<0.499$). The mean values of ADA between the two groups were 57.6 (26.66) IU/L and 76.21 (42.22) IU/L ($p<0.200$). The frequency of complications were: wounds sepsis for seconday decortication (4 (21.05%)) – for primary decortication there was none; 1 (5.26%) recurrent empyema following secondary decortication, with none after primary; and 1 (5.26%) chest wall abscess following secondary decortication, with none for primary.

Conclusion. The patients who underwent secondary lung decortication had a longer hospital stay (both in ICU and ward) than those who underwent primary decortication. There were increased frequencies of complications for patients who underwent secondary decortication v. primary decortication. There was no statistical difference between demography (age), CD4 count (HIV patients) and ADA. The frequency of complications (recurrent empyema, chest wall abscess and wound sepsis) was higher for secondary decortication. **Note:** The results obtained are preliminary and must not be considered as conclusive. Further data are still being collected to complete this study.