RESPIRATORY MORBIDITY AND LUNG FUNCTION OF WOMEN EXPOSED TO DIFFERENT LEVELS OF INDOOR AIR POLLUTION IN RURAL BANGLADESH: A CROSS-SECTIONAL STUDY

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Introduction Cooking and heating with biomass fuels in simple traditional stoves, produce high levels of Indoor Air pollution (IAP) and are major causes of respiratory disease burden. We compared, the episodes of respiratory symptoms and lung function status of women using less polluting-Improved Cooking Stove (ICS & chimney diverting smoke) and Gas Cooking Stove (GCS, smokeless) with those using more polluting-Traditional Cooking Stove (TCS) in rural Bangladesh.

Methods This cross-sectional study was conducted in three rural villages on 155 women who were cooking regularly for the family at least for last one year in poorly ventilated kitchen using TCS (n = 76), ICS (n = 34) and GCS (n = 43). Data were collected on respiratory symptoms events (RSE—cough, cold, phlegm, breathing difficulties, and chest tightness/discomfort) during the last 1 month and any of the RSEs in last 1 year using structured questionnaire. Lung function test was performed using spirometer. The IAP was estimated using proxy measures such as cooking duration, frequency, type of fuels and stove type.

Results Mean (SD) age and BMI of the participants were 39 (SD = 12.23) year and 23.7 (SD = 4.28) kg/m². TCS users had significantly higher risk of cold, (OR 1.23, p = 0.01), breathing difficulty (OR 3.33, p = 0.004), chest tightness/discomfort (OR 2.7, p = 0.004), having phlegm without cough (OR 3.9, p = 0.04), cough aggravated by smoke (OR 3.1, p = 0.04), in last 1 month and 6 or more episodes of RSEs (OR 8.3, p < 0.001) last 1 year. Statistically significant difference was found in mean value of FEV1/FVC (ICS & GCS = 89.97, TCS = 86.73, p = 0.001) and 59% of respondents had restricted lung function status irrespective of their use of different stove.

Conclusion Traditional cooking stove use is associated with higher prevalence of respiratory morbidity symptoms and reduced level of lung function in rural Bangladesh. A large scale study is needed for more precise quantification of indoor air pollution and respiratory function.

UTILITY OF PREOPERATIVE LUNG FUNCTION IN PREDICTING REGRESSION OF PULMONARY HYPERTENSION AFTER SURGICAL CORRECTION OF MITRAL STENOSIS

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Introduction Rheumatic heart disease, predominantly mitral stenosis is a chronic disease that produces an increase in the left atrial pressure and consequently venous pulmonary hypertension. Preoperative lung function which could be obtained from spirometry can evaluate respiratory reserve in cardio-pulmonary patients who will undergo surgery. However, data on the use of spirometry in predicting the rate and extent of regression of preoperative pulmonary artery hypertension is limited.

Methods We determined the usefulness of preoperative lung function by spirometry in predicting regression of pulmonary hypertension after surgical correction of mitral stenosis among 20 patients who underwent mitral valve surgery at Philippine Heart Center from July to December 2009.

Results Among the twenty patients included in the study, one had normal spirometry and another one had mild obstructive abnormality. Majority of the patients (18/20) had restrictive abnormality. Nineteen patients had regression of PAP. Among them, 18 patients were noted to have restrictive abnormality and one with normal spirometry. There was only one patient who did not have regression of PAP and found to have a mild obstructive abnormality. Correlation of the severity of restrictive lung defect with the change in PAP classification among nineteen patients showed lack of correlation with a spearman coefficient of 0.041 and p-value of 0.863. (Figure 1)

Conclusion This study showed that majority of RHD patients particularly mitral stenosis will have a preoperative spirometric abnormality of restrictive pattern. Among the study group, almost all patients (19/20) will have regression of pulmonary hypertension after surgery except for one patient with obstructive lung abnormality. Though results were not significant, we cannot conclude that preoperative lung function is not predictive of regression of pulmonary hypertension after surgical correction of mitral stenosis due to inadequacy of sample size. Thus, further investigation is warranted.

![Figure 1](image-url)

Correlation of the Severity of Restrictive Lung Defect with the Change in Pulmonary Artery Pressure Classification Among 19 Patients.

* Spearman Coefficient
** Severity of restrictive lung defect (1-normal, 2-mild, 3-moderate, 4-moderately severe, 5-severe, 6-very severe)
*** Change in PAP (0-no change; 1-regression by 1 scale, e.g. moderate to mild; 2-regression by 2 scales, e.g. severe to mild; 3-regression by 3 scales, e.g. severe to normal)
UPREGULATION OF BMPR2 BY GENE DELIVERY AMELIORATES MONOCROTALINE AND HYPOXIA-INDUCED PULMONARY HYPERTENSION: A ROLE FOR ENDMT?

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Introduction Mutations in the bone morphogenetic protein receptor type-2 (BMPR2) are implicated in pulmonary hypertension (PAH). BMPR2 signaling has complex interactions with TGF-β signaling mechanisms. Gene replacement therapy using a normal BMPR2 gene could be a therapeutic intervention. Upregulation of BMP signaling may act in part by modulation of TGF-β mediated vascular pathology such as endothelial-mesenchymal transition (EndMT).

Methods We studied targeted adenoviral BMPR2 gene therapy in two rat models of established PAH in which BMPR2 is downregulated (and TGF-β upregulated): chronic hypoxia and monocrotaline. We then tested the ability of TGF-β1 to induce EndMT in vitro in primary human pulmonary microvascular endothelial cells (HPMVEC), and investigated whether BMP signaling impacted on this process.

Results In both rat models those receiving BMPR2 gene delivery had significantly less right ventricular hypertrophy, less pulmonary vascular resistance, improved cardiac function and reduced vascular remodeling. In vitro, TGF-β1-induced EndMT was demonstrated by morphological and immunofluorescent imaging showing loss of the endothelial marker, VE-Cadherin, and gain in expression of mesenchymal markers, fibronectin (FN) and S100A4. Immunoblots reconfirmed EndMT by demonstrating decreased VE-Cadherin and a concomitant increase in FN expression. Incubation with BMPR2 ligands BMP-2 and -7 lead to a partial reversal of EndMT even in the ongoing presence of TGF-β1.

Conclusion Collectively, these results provide evidence of a protective role of the BMPR2 axis in PAH. Upregulation of BMPR2 signaling may be a therapeutic strategy for established pulmonary hypertension. Funding: NHMRC and National Heart Foundation (Australia).

PREOPERATIVE PULMONARY ARTERIAL HYPERTENSION ASSESSMENT IN PATIENTS UNDERGOING CARDIAC SURGERY

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Introduction Preoperative clinical risk assessment for predicting post-operative pulmonary complications (PPC) among patients with pulmonary arterial hypertension (PAH) undergoing cardiac surgery largely involves the identification of preoperative risk factors. No single study supports that similar risk factors may predict occurrence of postoperative pulmonary complications in patients with pulmonary arterial hypertension which may contribute to morbidity, mortality, and length of hospital stay.

Methods A total of 32 patients (Male: 34%; Female: 66%) with mild to severe pulmonary arterial hypertension who underwent elective cardiac surgery at our center were followed up to investigate the rate of occurrence of post-operative pulmonary complications (atelectasis, pneumonia and respiratory failure). Preoperative clinical factors including a number of ancillaries (i.e. arterial blood gas, chest radiograph, pulmonary function test, 6-minute walk test and 2D echocardiography or hemodynamic studies) were evaluated to identify its association with the development of PPCs.

Results Only 19% of the patients in this cohort developed postoperative pulmonary complication which is mainly postoperative pneumonia. Among the preoperative clinical factors considered, significant association between postoperative pneumonia and both the severity of pulmonary arterial hypertension and WHO functional class were noted with a p value of 0.004 and 0.018, respectively. Age (p = 0.541), BMI (p = 0.637), smoking history (p = 0.786) and presence of comorbidities were not significantly associated with the development of postoperative pneumonia. Similarly, ventilatory defect either restrictive or obstructive and 6MWD (p = 0.165) test did not correlate significantly to postoperative outcome of these patients.

Conclusion In conclusion, postoperative pulmonary complications occurred in 19% of patients. This study confirms that, among the preoperative clinical and laboratory variables evaluated, the severity of pulmonary arterial hypertension and WHO functional class predicts occurrence of postoperative pneumonia.
POLYMORPHISMS OF HUMAN VASCULAR ENDOTHELIAL GROWTH FACTOR GENE IN HIGH-ALTITUDE PULMONARY EDEMA SUSCEPTIBLE SUBJECTS

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Introduction Based on the reported biological property and function of vascular endothelial growth factor (VEGF) during hypoxic conditions, many investigations have studied the role of VEGF in the pathogenesis of high altitude sicknesses, including high-altitude pulmonary edema (HAPE). Unfortunately, no consistent findings have been demonstrated. We analyzed the association of VEGF gene polymorphisms with susceptibility to HAPE in order to shed light on the debate concerning the biological role of VEGF in the pathogenesis of HAPE.

Methods The study included 53 HAPE susceptible subjects (HAPE-s) and 69 HAPE resistant mountaineer controls (HAPE-r). Subjects in both groups were Japanese and comparable in terms of age and sex ratios. The single nucleotide polymorphisms (SNPs) of the VEGF gene, namely C-2578A, G-1154A and T-460C in the promoter, G-nucleotide polymorphisms (SNPs) of the VEGF gene between the HAPE-s and HAPE-r groups. Furthermore, neither the PaO2 nor the pulmonary hemodynamics was associated with the examined SNPs in the 21 HAPE-s subjects.

Results No statistically significant differences were found in the allele frequencies, genotype distributions and haplotype frequencies of the examined SNPs of the VEGF gene between the HAPE-s and HAPE-r groups. Furthermore, neither the PaO2 nor the pulmonary hemodynamics was associated with the examined SNPs in the 21 HAPE-s subjects.

Conclusion The current genetic study could not evidence that the functional SNPs of the VEGF gene are not associated with susceptibility to HAPE in a Japanese population.

THERAPEUTIC EFFECT OF LECITHINIZED SUPEROXIDE DISMUTASE (PC-SOD) ON BLEOMYCIN-INDUCED PULMONARY FIBROSIS

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Introduction Idiopathic pulmonary fibrosis (IPF) is thought to involve inflammatory infiltration of leucocytes, lung injury induced by reactive oxygen species (ROS), in particular superoxide anion, and fibrosis (collagen deposition). As yet, no treatment has been shown to improve definitively the prognosis for IPF patients. The enzyme, superoxide dismutase (SOD) has shown promising results; this enzyme catalyses the dismutation of superoxide anion to hydrogen peroxide, which is subsequently detoxified by catalase to oxygen and water. Lecithinized SOD (PC-SOD) has overcome a number of previous clinical limitations of SOD, including low tissue affinity and low stability in plasma. In this study, we examined the effect of PC-SOD on bleomycin-induced pulmonary fibrosis.

Methodology Severity of the bleomycin-induced pulmonary inflammatory response and fibrosis in mice was assessed by various methods, such as the number of leucocytes in bronchoalveolar lavage fluid (BALF), histopathologic evaluation, and determination of hydroxyproline levels in lung tissue.

Results Intravenous administration of PC-SOD suppressed the bleomycin-induced increase in the number of leucocytes in BALF. Bleomycin-induced epithelial damage, collagen deposition and increased hydroxyproline levels in the lung were also suppressed in animals treated with PC-SOD. The dose-response profile of PC-SOD was bell-shaped, but concurrent administration of catalase restored the ameliorative effect at high doses of PC-SOD. Intratracheal administration or inhalation of PC-SOD also attenuated the bleomycin-induced inflammatory response and fibrosis. The bell-shaped dose-response profile of PC-SOD was not observed for these routes of administration.

Conclusion These results suggest that PC-SOD at intermediate doses is effective for the treatment of IPF. The ineffectiveness of PC-SOD at higher doses seems to be due to the accumulation of hydrogen peroxide. Furthermore, compared to intravenous administration, inhalation of PC-SOD is a more therapeutically beneficial route of administration due to the higher safety and quality of life of the patient treated with this drug.
CLINICAL PATTERN OF IDIOPATHIC PULMONARY FIBROSIS IN IRAN: A RETROSPECTIVE STUDY

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Introduction Since there are very few documented data on IPF in Iran, we decided to collect information from registered patients to find out the epidemiological, clinical, and radiological features as well as the course and outcomes of the disease.

Methods This is a retrospective analysis of symptoms, signs, radiology, lung biopsy, course and outcome of IPF patients in the National Research Institute of Tuberculosis and Lung Diseases (NRITLD) and the Respiratory Clinic between 1988 and 2008.

Results Dyspnea (68.2%) and cough (60.6%) were the most common symptoms and crackles and finger clubbing were found in 85.6% and 55.3% of the patients, respectively. Reticular and reticulonodular opacities were the most common patterns in HRCT. 59.1% patients had diffuse interstitial fibrosis in biopsy. The mean survival time was 13.7 years and the 1 and 3 year survival rates were 88% and 79%, respectively.

Conclusion Iranian patients may be developing the disease a decade earlier and with a higher survival rate than the western patients.

MEASUREMENT OF RESPIRATORY RESISTANCE AND REACTANCE USING FORCED OSCILLATION TECHNIQUE IN COMBINED PULMONARY FIBROSIS AND EMPHYSEMA

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Introduction Combined pulmonary fibrosis and emphysema (CPFE) is a syndrome involving both emphysema and diffuse parenchymal lung disease with fibrosis on chest computed tomography (CT). The clinical characteristics of CPFE have been described; however, the differences between the syndrome and interstitial pneumonia (IP) or chronic obstructive pulmonary disease (COPD) are not fully understood. The purpose of this study was to clarify the differences in respiratory resistance and reactance using a forced oscillation technique.

Methods The subjects included 26 patients with CPFE, 27 with IP, and 21 with COPD. Respiratory resistance and reactance were measured using Most-Graph-01 (CHEST Mi Co., Ltd., Tokyo, Japan), and pulmonary function tests were also performed on the same examination day.

Results The FEV1 and FEV1/FVC values were significantly lower in COPD patients compared to those with CPFE and IP. There was no significant difference in VC between CPFE, IP, and COPD patients. The carbon monoxide transfer coefficient values were significantly lower in CPFE and COPD patients compared to those with IP. Resistance at 5 Hz (Rs: cmH2O/L/s) was significantly elevated in patients with COPD (CPFE, 3.48; IP, 4.20; and COPD, 4.56, respectively, p < 0.05 for CPFE vs. COPD), while R20 was elevated in patients with IP and COPD compared to those with CPFE (CPFE, 2.53; IP, 3.47; and COPD, 3.24, respectively, p < 0.05 for CPFE vs. IP and for CPFE vs. COPD). The resonant frequency (Hz), a parameter of reactance, was significantly higher in COPD patients compared to CPFE and IP patients (CPFE, 8.76; IP, 9.09; and COPD, 15.50, respectively, p < 0.05 for CPFE vs. COPD and for IP vs. COPD).

Conclusion CPFE patients exhibited no airflow limitation or restrictive impairment, but showed severe gas exchange abnormality similar to that in COPD patients. The absence of an elevation of respiratory resistance or reactance reflects homogenous ventilatory mechanics in CPFE, thereby differentiating it from IP and COPD. These results suggest that CPFE is a distinct syndrome differing from IP or COPD.
BRONCHOARTERIAL RATIO ON HIGH RESOLUTION CT SCAN OF THE CHEST IN CHILDREN WITHOUT PULMONARY PATHOLOGY—NEED TO REDEFINE BRONCHIAL DILATATION

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Introduction
The radiological definition of airway dilatation and bronchiectasis in children has substantial limitations. Bronchoarterial ratio is a commonly used criterion to define airway dilatation despite the lack of normative pediatric data. The objective of our study was to determine the range of normal bronchial to accompanying arterial diameter ratio on high resolution CT scan of the chest in children and compare it with the available adult data.

Methods
Children undergoing MDCT chest for non-pulmonary conditions at a single centre were prospectively identified. High resolution reconstruction was performed on those included and both airway and vessel diameters were measured in the upper and lower lobes of both lungs. Mean bronchoarterial (BA) ratio was calculated for each included child and its correlation with age assessed.

Results
Forty one children were included, the mean (SD) BA ratio was 0.626 (0.068) (range 0.437 to 0.739). This ratio was clinically similar though statistically lower than comparable adult data [combined mean (SD) 0.676 (0.12); p = 0.01]. No correlation was found with age in our cohort (r = −0.21, p = 0.18).

Conclusion
In pediatric age-group, the airway is significantly smaller than the adjoining vessel. Using the radiological criteria of BA ratio greater than one to define bronchial dilatation would underestimate the presence and extent of bronchiectasis leading to delayed and missed diagnosis. This highlights the need to redefine the criteria for bronchial dilatation in children.

ENDOTHELIAL FUNCTION IN CHILDREN WITH PRIMARY SNORING: A CASE-CONTROL STUDY

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Introduction
Sleep disordered breathing, especially obstructive sleep apnea syndrome, has been found to be associated with endothelial dysfunction in both adult and paediatric populations. However, the role of non-apnoeic snoring on endothelial function has not been investigated.

Methods
Children aged 6–18 years with habitual snoring were recruited from our sleep disorder clinic. Non-snorers were recruited from participants of a community growth survey. All participants underwent nocturnal polysomnography (PSG) and ultrasonographic flow-mediated dilation (FMD) evaluation on the same day. Fasting blood was taken for glucose level and lipid profile determination. Subjects with an obstructive apnoea hypopnoea index (OAHI) <1 but reported by parents to have habitual snoring (at least 3 nights per week) in the past 12 months were defined as primary snorers (PS). Those having an OAHI < 1 without habitual snoring in the past 12 months were grouped as non-snorers. Children with body mass index of greater than the 85th percentile of the local reference were defined as overweight. Subjects were divided into groups of normal weight, overweight, non-snorers and PS for comparisons.

Results
In total, 161 children, of whom 78 were boys, with a mean (SD) age of 11.8 (2.8) years were recruited. Sixty-six of them were PS. Subjects with PS had significantly reduced FMD than non-snorers for both the normal weight group (p = 0.040) and the overweight group (p = 0.039) (Table 1). Multivariate linear regression model showed that primary snoring (p < 0.001) were independently associated with FMD after controlling for possible confounders including overweight, gender, baseline vessel diameter and log-transformed OAHI.

Conclusion
Primary snoring in children is independently associated with impaired endothelial function.

|                | Normal weight | Overweight |
|----------------|---------------|------------|
|               | 1. Normal     | 2. 95%     | 3. Normal     | 4. 95%     |
|               | m≤20          | m≥20       | m≤35          | m≥35       |
| Age, y        | 12.0±2.5      | 11.4±2.2   | 12.3±2.7      | 11.3±2.8   |
| Height, cm    | 156±13        | 162±18     | 155±13        | 168±15     |
| Weight, kg    | 39.1±10       | 36.6±12    | 41.1±21       | 57.1±18    |
| BMI, kg/m²    | 17.7±17       | 17.3±18    | 20.7±3.2      | 25.1±4.1   |
| BMI z-score   | 0.67±0.39     | 0.64±0.36  | 1.09±0.52     | 1.02±0.41  |
| Waist, cm     | 89±45         | 79±41      | 74±11         | 76±10      |
| OBAM, %       | 12.6±10.56    | 12.6±10.63 | 11.8±15.12    | 11.4±10.3  |
| Snore rate, % | 60.6±0.40     | 61.0±0.46  | 61.0±0.43     | 61.0±0.43  |
| Age, y        | 11.8±2.8      | 12.0±2.7   | 11.8±2.7      | 11.8±2.7   |
| Height, cm    | 156±13        | 162±18     | 155±13        | 168±15     |
| Weight, kg    | 39.1±10       | 36.6±12    | 41.1±21       | 57.1±18    |
| BMI, kg/m²    | 17.7±17       | 17.3±18    | 20.7±3.2      | 25.1±4.1   |
| BMI z-score   | 0.67±0.39     | 0.64±0.36  | 1.09±0.52     | 1.02±0.41  |
| Waist, cm     | 89±45         | 79±41      | 74±11         | 76±10      |
| OBAM, %       | 12.6±10.56    | 12.6±10.63 | 11.8±15.12    | 11.4±10.3  |
| Snore rate, % | 60.6±0.40     | 61.0±0.46  | 61.0±0.43     | 61.0±0.43  |
**A PROSPECTIVE RISK FACTOR ANALYSIS FOR SLEEP DISORDERED BREATHING AMONG PEDIATRIC PATIENTS WITH CONGENITAL HEART DISEASE**

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**Introduction**

Children with cyanotic congenital heart disease live with baseline oxygen saturations in the mid 70s, so hence they exist on the steep part of the oxyhemoglobin dissociation curve. These patients are at increased risk for the hemodynamic variations occurring during apneas/hypopneas. Long-term outcomes for children with congenital heart disease could be adversely affected since the etiology of pulmonary hypertension is believed to be secondary to the hypoxia and hypercarbia seen in chronic airway obstruction paired with the sympathetically overstimulation caused by frequent sleep arousals.

**Methods**

A prospective two part questionnaire for the screening of SDB for pediatric patients was performed. Part one consists validated Pediatric Sleep Questionnaire (PSQ). Part two consisted of subjective assessment of the subject’s cardiovascular and respiratory symptom. All odds ratios of greater than 1 with p-values less than 0.05 were considered significant covariates.

**Results**

A total of 206 children met the inclusion criteria and were included in the final analysis. The prevalence of sleep disordered breathing (SDB) was high at 63.1%. Among the factors analyzed, an increased frequency of pulmonary diseases (greater than 7 times/year) was statistically correlated with increased PSQ scores ($p = 0.002$). Likewise, early palliative repair ($p = 0.001$) was statistically associated. A high total cardiac score is almost 4 times associated with increased PSQ ratings. Hence patients with congenital heart disease and increased PSQ scores. A high total cardiac score is almost four times associated with increased Pediatric Sleep Questionnaire (PSQ) ratings ($p = 0.018$).

**Conclusion**

Increased frequency of pulmonary diseases and early palliative repair was statistically correlated with increased Pediatric Sleep Questioner scores. A high total cardiac score is almost four times associated with increased PSQ ratings. Hence patients with congenital heart disease and Sleep Disordered Breathing are more likely to have worse cardiac symptoms. Patient with congenital heart disease should be routinely examined for the presence of Sleep Disordered Breathing because these sub group of pediatric patients is 7x have more high risk for developing Sleep Disordered Breathing.

**BLOWING BUBBLES AS BREATHING EXERCISE IN PREVENTING THE OCCURRENCE OF ATELECTASIS AMONG POST OPEN HEART SURGERY PRESCHOOLERS**

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**Introduction**

Atelectasis, a common pulmonary complication of patient who underwent open heart surgery. Deep breathing exercise is one of the interventions implemented to prevent the occurrence of this complication post-operatively. Among preschoolers however, making them perform this breathing exercise less likely because compliance is a challenge since children in this age group have a short attention span and may get bored easily. With this problem at hand, the investigators conceptualized an innovative technique, blowing bubbles as a breathing exercise, in order to prevent Atelectasis among post-operative heart surgery preschoolers.

**Methods**

This study is an open-label randomized control trial that compared blowing bubbles with the traditional deep breathing exercise among preschoolers who underwent open heart surgery. It took 4 months to complete the study and there were 64 patients screened but only 60 qualified based on the inclusion/exclusion criteria. Thirty were assigned randomly to the blowing bubbles group and 30 to the deep breathing exercise. Atelectasis as documented on chest X-rays was the outcome measured.

**Results**

Out of the 30 participants in the blowing bubble group, 8 developed atelectasis while in the blowing bubbles group, 1 out 30 had atelectasis. This generated a $p$-value of 0.026 which is statistically significant, favoring the blowing bubbles group. Furthermore, risk analysis showed an absolute risk reduction of 23.34% and a relative risk of less than 1 which means that atelectasis is less likely to occur in the blowing bubbles group in comparison to the traditional breathing exercise group.

**Conclusion**

Blowing bubbles significantly reduces the occurrence of atelectasis among post-open heart surgery preschoolers as opposed to deep breathing exercise. The use of blowing bubbles as a deep breathing modality incorporated through play activity is recommended among preschoolers.

**THREE-YEAR FOLLOW UP OF AEROBIC CAPACITY IN CHILDREN AFFECTED BY SEVERE ACUTE RESPIRATORY SYNDROME (SARS)**

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**Introduction**

Severe acute respiratory syndrome (SARS) is a novel contagious respiratory infection caused by the SARS coronavirus (SARS CoV). In adults, a mortality rate of 10% has been reported, and respiratory complications can occur in up to 20% of survivors. The disease pattern is different in children [1,2] but prevalence of longer term respiratory complications in children is unknown. The aim of this study was to investigate the aerobic capacity of children at 3 years after the diagnosis of SARS.

**Methods**

Twenty-seven patients (mean age of 17.7 years) who completed both pulmonary function and maximal aerobic capacity (peak VO$_2$) tests at 6 and 15 months after the acute illness were invited for re-assessment. They underwent anthropometric assessment, full pulmonary function and exercise treadmill test. Subjects with abnormal HRCT at 15 months underwent repeat scans.

**Results**

At this 36-month assessment, 6 subjects refused to take part, and the main reasons of refusal were work commitments or time clashes with school activities. The remaining 21 subjects (43% female) provided complete pulmonary function and exercise data. Pulmonary function test was normal in all patients. Peak VO$_2$, peak oxygen pulse, and ventilatory anaerobic threshold (VAT) at this assessment were significantly higher than that recorded at 6 and 15 months. Ventilatory efficiency (ventilatory equivalents for oxygen, VEO$_2$) and perfusion to the lungs (end-lidal partial carbon dioxide pressure, PETO$_2$) significantly improved since 15 months and maintained at 36 months. Though peak VO$_2$ further improved at 36 months in patients with persistent or without radiological abnormalities, their values were 65% and 81% respectively of normal controls.

**Conclusion**

This study is the most comprehensive report of post-SARS exercise responses in children and adolescents. Improvements in aerobic capacity over a period of 36 months after the initial illness were demonstrated, but values remained suboptimal when compared to normal reference.

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**ALLERGIC SENSITIZATION TO DOMESTIC MITES IN A LOCAL ADULT POPULATION OF MALAYSIAN PATIENTS WITH ASTHMA AND ALLERGIC RHINITIS**

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**Introduction**

Domestic mites are an important source of indoor allergens responsible for the development of allergic diseases worldwide. To date, there is no local epidemiology data on the allergic sensitization to domestic mites among adult patients with asthma and allergic rhinitis. Methods From November 2009 to June 2010, we prospectively recruited adult patients with asthma and/or allergic rhinitis from an urban-based specialist medical centre in Penang, Malaysia, carefully profiling their allergic sensitization to domestic mites by means of skin prick tests and clinico-demographic details.

**Results**

Of the 60 patients [mean age (CI) 29 years (26–32); 35% male] recruited, skin allergic rates to Dermatophagoides pteronyssinus, D. farinae, Blomia tropicalis and Tyrophagus putrescentiae were 71%, 75%, 70% and 56% respectively. There was no significant difference in these rates among patients with asthma, allergic rhinitis or both. There were significant associations between the number of people living in the same house with rates of D. pteronyssinus ($p = 0.05$) and D. farinae ($p = 0.02$), and the frequency of bed sheet washing with the rate of Tyrophagus putrescentiae ($p = 0.02$). With younger age, there were also significant higher allergic rates with D. pteronyssinus ($p = 0.006$), D. farinae ($p < 0.001$), Blomia tropicalis ($p < 0.002$) and Tyrophagus putrescentiae ($p = 0.04$).

**Conclusion**

Our preliminary data shows a high prevalence of allergic sensitization to domestic mites in our local adult patients with asthma and/or allergic rhinitis. The findings have implication on allergen control with the view of disease mitigation.

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Asthma Awareness and Attitudes in India: A Prospective Study of 1460 New Asthma Patients at Tertiary Care Centre

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Introduction
To study awareness about asthma and attitudes to treatment in Indian patients at a tertiary care centre.

Methods
Prospective analysis of 1460 newly diagnosed asthma patient's attending asthma clinic at Metro Centre for Respiratory Diseases (March 2009 and January 2010).

Results
Out of 1460 patients, 62.3% were male and 37.7% females. 79% patients had used alternative asthma therapies: Homeopathy, Ayurveda and Yoga with poor results and 23.8% had used multiple therapies prior to visit our centre. Patients reported being afraid of acute attack (42.8%) and hospitalization (28.8%). Although inhalers were used by Indian patients in 54.7% but still oral drugs were used regularly by 41.6% patients. Compared to 27.1% in 2002 only 6.1% were inhaler naïve (t-value 0.00018). Only 540/585 (63.5%) patients were using spacer with MDI's and 48% (260/540) being able to demonstrate correct use. Common errors seen in MDI’s use were: A) slow and steady inhalation (48.1%) and B) breath holding after deep inhalation (42.5%). For-moterol and budesonide DPI was considered most effective by Indian patients in controlling disease when asked to rate their devices and drugs. When counseled by experts 88% were sure to be regular on treatment but 6 months later 61% remained regular (t-value 0.00007). Fear of addiction (32.7%) and cost of therapy (25.4%) were cited causes for noncompliance.

Conclusion
Indian patients use alternative therapy for asthma treatment before coming to tertiary centre and still prefer oral therapy. Despite extensive education being afraid of attacks become noncompliant due to fear of addiction and cost of therapy.
TRENDS OF ASTHMA IN BANGLADESH: FINDINGS OF NATIONAL ASTHMA PREVALENCE SURVEY 1999 & 2010

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Introduction In 1999, first population-based studies to determine the magnitude of the asthma problem have been carried out in Bangladesh, to define the prevalence of asthma and to identify the risk factors of asthma in Bangladesh. After 10 years, same study carried out to find out trends of asthma in Bangladesh.

Methods A cross-sectional study was conducted from January 1999 to August 1999 on 5642 people and same study carried out from November 2009 to April 2010 on 5256 subjects. Data collected from stratified randomly selected primary sampling units of all 64 districts. Face-to-face interviews were performed with housewives or other guardians at the household level using a structured questionnaire.

Results In 1999, the prevalence of asthma (wheeze in the last 12 months) was 6.9% (95% CI: 6.2–7.6) whereas in 2010 it is 7.67% (95% CI: 7.59–7.75). In 1999, prevalence of other asthma definitions were: ever wheeze (lifetime wheeze) 8.0% (95% CI: 7.3–8.7); perceived asthma (perception of having asthma) 7.6% (95% CI: 6.9–8.3); doctor diagnosed asthma (diagnosis of asthma by any category of doctor either qualified or unqualified) 4.4% (95% CI: 3.9–4.9). In 2010, ever wheeze (lifetime wheeze) 8.6% (95% CI: 8.52–8.69); perceived asthma (perception of having asthma) 8.31% (95% CI: 8.23–8.40); doctor diagnosed asthma (diagnosis of asthma by any category of doctor either qualified or unqualified) 6.26% (95% CI: 6.20–6.33). The prevalence of asthma in children (5–14 years) was higher than in adults (15–44 years) (7.3% versus 5.3%; odds ratio [OR] = 1.41, 95% CI: 1.09–1.82). Trends of Asthma in Bangladesh remains, almost static over last 10 years although at present prevalence is more in adults than children. In adults (15–44 years) all categories were slightly higher than in children (5–14 years) (7.04% versus 6.25%; odds ratio [OR] = 1.17, 95% CI: 1.037–1.215). It is found to be significantly higher in house-holds with one to five members than in larger house-holds (OR = 1.172, 95% CI: 0.91393–1.50432). The poor two quintiles (OR = 1.4598, 95% CI: 1.1386–1.8707) and illiterate group (OR = 1.2107, 95% CI: 0.87418–1.65278) and primary level of education (OR = 1.4336, 95% CI: 1.10874–1.84769) were more vulnerable to asthma attacks than the high-income group and more educated people, respectively.

Conclusion Asthma has increased from 7 million people to 11 million over last 10 years although prevalence is almost similar.

UPREGULATED EXPRESSION OF SECRETORY GROUP V PHOSPHOLIPASE A2 IN PATIENTS WITH ASTHMA BUT NOT WITH COPD OR IPF

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Introduction Secretory gVPLA2 is an inducible protein and an essential signaling molecule for airway inflammation and airway hyperresponsiveness in immunosensitized and LPS-induced ALI in mice. However, identification of secretory gVPLA2 in human airway diseases has not been identified previously.

Methods Donors were classified as non-asthmatic, asthmatic, COPD or IPF from prior medical records. Identification of gVPLA2 in airway microsections was quantified by immunofluorescence analysis. Expression of gVPLA2 in was analyzed using criteria for intensity scoring in a single-blinded method. In separate studies, airway smooth muscle cells (ASMC) obtained from asthmatic and non-asthmatic subjects (Regional Organ Bank of Illinois) were cultured within 24 h from death. Adhesion was assessed by measuring the eosinophil peroxidase activity of adherent eosinophils to ASMC. Inhibition of adhesion was assessed using neutralizing mAbs against surface adhesion molecules and mAb against gVPLA2.

Results GVPLA2 was abundantly expressed in airway smooth muscle, epithelium and endothelium of patients with a history of asthma compared to non-asthmatic. Low expression of gVPLA2 was observed in tissues from COPD and IPF subjects. In cultured asthmatic ASMC, surface ICAM-1 and VCAM-1 also were upregulated. Activation of asthmatic ASMC with methacholine caused release of gVPLA2, which corresponded to augmented eosinophil adhesion; MCL-3G1, a mAb against gVPLA2, prevented these responses. Blockade of surface β1- and β2-integrin on eosinophils or its counter-ligands on ASMC blocked also the adhesion.

Conclusion Our data demonstrated that gVPLA2 is highly expressed in asthmatic ASMC but not in patients having, no history of asthma, COPD or IPF. GVPLA2 secreted from activated ASMC augments eosinophil adhesion; MCL-3G1 specifically blocked the cell-cell ligation. These data are the first demonstration that the upregulated eosinophil adhesion to the surface of asthmatic ASMC is linked directly to the secretory gVPLA2. Based on our findings, it is likely that the ASMC, which is the natural source of gVPLA2, regulates airway inflammation and airway hyperreactivity, which are hallmarks of asthma. Supported by NIH grant HL-85779 and UK GSK Center of Excellence in Asthma.
MULTI-DRUG RESISTANT TUBERCULOSIS (MDR-TB) AND THE DOTS-PLUS PILOT PROJECT IN BANGLADESH – PRESENT STATUS AND FUTURE CHALLENGES IN MOVING TO PROGRAMMATIC MANAGEMENT OF DRUGRESISTANT TUBERCULOSIS (PMDT)

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Introduction The emergence of resistance of MDR – TB, has become a significant public health problem in Bangladesh as well as globally. Bangladesh ranks ninth on the list of 27 high burden MDR and XDR-TB countries. WHO estimates that 3% of new and 15% of previously treated TB patients have MDR-TB. The MDR-TB treatment was started at NIDCH in 1998. Initially, funds were generated through Zakat, personal donations and NGO support. Presently, the National Tuberculosis Control Program (NTP) is implementing DOTs Plus (DOTS+) and NTP with NIDCH from 2006. The project is being monitored by the Global Fund Committee (GLC) and financial support from GFATM. The drugs used are Kanamycin Ethionamide, Cycloserine, Pyrazinamide, and Ofloxacin divided into Intensive phase – 6 months and Continuation Phase – 18 months.

Methods All clinical records were examined.

Results Starting from August 2008, 402 MDR – TB patients have been enrolled till 31st December 2009 of whom male 264 and female 138. Mean age was 41 (range 12–70 years). All patients underwent sputum smear microscopy and culture on a monthly basis. 160 patients are in the intensive phase of treatment whereas 157 patients have been successfully converted at end of intensive phase. In total, 36 patients died and 49 defaulted. The side effects encountered were mainly gastrointestinal.

Conclusion The MDR-TB can be successfully managed at specialized centre like NIDCH in resource limited settings like Bangladesh through optimum utilization of resources. Due emphasis should be given to the adequate nutritional support and proper management of the co-morbidities and side-effects of the drugs. Establishment of quality diagnostic laboratories, capacity building for increasing skilled manpower and ensuring smooth supply of second line drugs are major challenges in the adoption of programmatic approach to MDR-TB management. Finally all measures should be focused on the nation-wide implementation of the quality DOTS for the prevention of MDR-TB and XDR-TB, because it can be a virtual death sentence.

KNOWLEDGE, ATTITUDES, AND PRACTICES FOR TUBERCULOSIS (TB) AMONG MEDICAL CLERKS IN A TERTIARY-CARE HOSPITAL

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Introduction Currently, there is still a lack of operational research analyzing the influence of an adequate TB curriculum in medical school. This study, aims to determine the efficiency of integration of TB program into the medical school curriculum, measured through the knowledge, attitudes, and practices of medical clerks on TB.

Methods A questionnaire-based survey on the knowledge, attitudes and practices on tuberculosis was conducted among medical clerks (fourth year medical students) in the UST Hospital. In total, 240 questionnaires were randomly distributed, of which 199 (83% response rate) of the questionnaires were returned fully accomplished. This was done over a period of one week.

Results A total of 94.5% (n=188/199) of the clerks believed that sputum exam and culture are still the standard diagnostic modalities; quadruple therapy for the treatment of second line drugs are major challenges in the adoption of programmatic approach to MDR-TB management. Finally all measures should be focused on the nation-wide implementation of the quality DOTS for the prevention of MDR-TB and XDR-TB, because it can be a virtual death sentence.

EVALUATION OF A 1-DAY PROTOCOL FOR SMEAR MICROSCOPY IN PULMONARY TUBERCULOSIS

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Introduction The study was undertaken to assess the feasibility of diagnosing pulmonary tuberculosis (PTB) by collecting two sputum samples on a single day (1-day protocol) and to compare the same with the national policy of collecting two samples on consecutive days (2-day protocol).

Methods Five hundred and thirteen individuals with cough exceeding 2 weeks were screened for pulmonary tuberculosis (PTB) by collecting three sputum samples, viz. day-1 spot sample, sample collected 1 hour after the first sample and next day morning sample. For the 2-day protocol, performance of the first and third samples were considered, while the 1-day protocol was evaluated using the two day-1 samples. Staining and microscopy were undertaken by two different technicians in a blinded manner.

Results Out of 513 patients, 40 patients defaulted on second day. Of the total number of patients recruited, 124 (24.2%) were smear-positive. The 2-day protocol was capable of detecting 121 patients (97.8%), whereas in the 1-day protocol 118 patients (95.2%) were smear-positive (p = 0.3). Of the drop-out patients, 7 (17.5%) were smear-positive. Comparing the variation in results between spot and morning samples, collection of morning sample exhibited no significant benefit over the collection of a second spot sample.

Conclusion Because the 2-day protocol does not lead to a statistically significant diagnostic difference compared to the 1-day protocol, the latter can be adopted as an alternative protocol, particularly in subjects who are more likely to default.

META-ANALYSIS: COMPARISON OF BRONCHOALVEOLAR LAVAGE AND SPUTUM INDUCTION IN DIAGNOSIS OF PULMONARY TUBERCULOSIS

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Introduction Tuberculosis, an important preventable and treatable cause of death, is a major health problem worldwide. Detecting patients with active pulmonary tuberculosis is an important component of tuberculosis control as early appropriate treatment renders these patients noninfectious and interrupts the chain of overall accuracy compared to bronchial lavage in diagnosing for smear negative tuberculosis.

Methods Computer search was done to obtain studies meeting inclusion criteria. The sensitivity, specificity and other measures of accuracy were pooled using forest plots. Diagnostic odds ratios were obtained. Summary receiver operating characteristics curves were used to summarize overall test performance. Funnel plots and Egger regression analysis were used to examine for publication bias.

Results Five prospective studies comparing diagnostic accuracy of fiberoptic bronchoscopy and sputum induction to diagnose smear negative TB were obtained. The pooled summary indexes showed that for bronchial lavage, the sensitivity is 0.49 (95% CI, 0.42 to 0.59) while specificity is 0.79 (95% CI, 0.75 to 0.84). Whereas for sputum induction, the sensitivity is 0.47 (95% CI, 0.40 to 0.54) and specificity is 0.83 (95% CI, 0.79 to 0.87). The summary DOR for bronchial lavage was 3.27 (95% CI, 2.17 to 5.35) while the summary DOR for sputum induction was 429 meaning sputum induction test had a higher level of overall accuracy (95% CI, 291 to 634).

Conclusion Sputum induction has comparable sensitivity and specificity and higher level of overall accuracy compared to bronchial lavage in diagnosing for smear negative tuberculosis.
**Introduction**

In a high-burden country for pulmonary tuberculosis like Philippines, screening for intrathoracic masses is not uncommon for intrathoracic masses to be treated empirically with anti-tuberculosis regimen. We aim to describe patients’ profiles, determine outcomes of empiric anti-tuberculosis treatment for such lesions.

**Methods**

We monitored patients with intrathoracic mass given empiric anti-tuberculosis regimen until “end-of-treatment,” decision to pursue diagnosis, or mortality. A 1-year prospective, observational, open-label, descriptive, cohort study, in a tertiary government hospital. Percentage association analysis was done at end of the study.

**Results**

In total, 20 patients presenting with intrathoracic mass lesions on chest X-ray/chest CT scan were treated empirically with anti-tuberculosis medicines without histopathologic evidence suggestive of pulmonary tuberculosis for the mass. Patients’ choices, clinical and financial status were factors considered by physicians in the decision for empiric treatment. There were 15 males, 5 females with average age 47 years. Most common chief complaints were cough (50%), pain (20%), hemoptysis (15%), shortness of breath (15%).

11 patients had pulmonary consult within 3 months of initial radiography. Histology of mass was confirmed within 3 months of pulmonary consult in 12 patients. 4 patients had the histology prior to starting empiric anti-TB treatment, which revealed non-specific findings. A total of 16 patients were treated empirically; prior to attempts for histologic diagnosis. Two of these patients never had diagnosis due to financial constraints. While 14 patients went on to pursue histopathology, which revealed underlying malignancy in eight patients. Malignancy was seen more on males, older age (>40 years), significant smoking history, larger mass size (~7-10 cm). Seven patients had clinical/radiographic improvement, two patients died, three were lost to follow-up.

**Conclusion**

Our study suggests no role for empiric anti-TB treatment for intrathoracic masses, even in a high-burden country like Philippines. We should vigorously pursue and search for definitive histologic diagnosis, as it will translate to cost-effectiveness, avoidance in delayed diagnosis, early institution of appropriate therapy.

**A Clinical Prediction Model for Estimating the Probability of Malignancy of a Solitary Pulmonary Nodule in the Philippine Setting**

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**Introduction**

We have shown that two commonly used prediction models (VA and Mayo) estimate poorly the probability of malignancy of solitary pulmonary nodules (SPN) in the Philippines. This is due to a large proportion of SPN arising from tuberculosis (TB). In the Philippines, and possibly for other countries with a high TB-burden, our clinical prediction model has a better estimate to the probability of SPN than both the VA and Mayo.

**Methods**

We developed a prediction model to identify malignant lung nodules based on clinical data and radiographic characteristics among patients with SPN identified retrospectively (October 2006 to March 2008) in our institution. Univariate and multiple logistic regression analysis were used to identify independent clinical variables. We applied the model to a new set of SPN patients (April 2008 and August 2008) and described its accuracy by comparing the predicted probability of malignancy with the final diagnosis. We constructed receiver operating characteristic (ROC) curves and reported 95% confidence interval. Calibration was done by dividing the sample into five equal groups based on predicted probability and plotting the median probability of each group against the observed frequency of malignancy for that group.

**Results**

Seventy-six SPN patients were included in the development of the prediction model, where size, margin and smoking history were found significant in the multivariate analysis. Prevalence of malignancy was 33%. The area under the receiver operating characteristic (ROC) curve was 0.82; 95% confidence interval (CI) of 0.77–0.87. The equation was obtained based on the identified predictors. Fifty-eight patients with SPN were included in the validation sample. Prevalence of malignancy was 36%. The ROC curve was 0.91; 95% CI of 0.85–0.97. Median predicted probabilities in all quintiles were lower than the observed frequency of malignancy for that group.

**Conclusion**

The local clinical model appeared to be sufficiently accurate to inform clinical decisions about the choice and interpretation of subsequent diagnostic tests. The accuracy of the local clinical prediction model was similar to that reported in its development.
Coxsackievirus B possesses remarkable oncolytic activity against human lung cancer without lethal side effects

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Introduction: The use of viruses as targeted cancer therapy has shown significant promise for novel anticancer therapy. Actually, a small number of enteroviruses, such as Coxsackievirus A (CVA) and Echovirus, have been reported to possess oncolytic activities against various human malignancies. However, a single intratumoral administration of CVA in vivo induces severe progressive muscle paralysis necessitating euthanasia of mice.

Methods & Results: In this context, we discovered that Coxsackievirus B (CVB) displayed a high level of tropism and lytic activities for human lung cancer cell lines as a result of screening of representative 39 enteroviruses. CVB specifically destroyed both human non-small and small cell lung carcinoma via surface virus receptors of coxsackievirus and adenovirus receptor (CAR) at a multiplicity of infection (MOI) of 0.001, whereas it did not destroy normal lung cells at even a higher MOI of 10. The MTS cell proliferation assay also supported those results. Furthermore, our in vivo study showed that consecutive intratumor injections of CVB remarkably inhibited the growth of subcutaneously pre-established lung tumors, with significantly more increased survival than untreated mice (P < 0.001). Surprisingly, in metastatic tumor mice model, intratumoral CVB injection into primary tumors in the right flank also significantly retarded the growth of pre-established contra-lateral tumors compared with untreated mice. According to the results of fragmented PARP detection assay, the oncolytic effects of CVB against tumors could be partially attributed to their apoptosis as well as cellular degenerative destruction. Furthermore, flow cytometric analyses showed that CVB could possess an immuno-stimulatory ability through robust infiltrated dendritic cells maturation in treated tumors. Moreover, none of mice died of CVB administration, suggesting the feasibility of clinical trials in the future, although analyses of serum biochemistry revealed moderate hepatic dysfunction due to CVB administration.

Conclusion: Our findings suggest that intratumor CVB administration could be a novel therapeutic modality against not only primary human lung cancer but also metastasized lesions.

Radio frequency ablation (RFA) is a technique that employs high-energy radio frequency waves to destroy non-small cell lung cancer. The radio frequency ablation probe, Le-Veen multiple array needle electrodes, is placed inside a tumor and opened like a tiny umbrella with 10 curved prongs that spring into the surrounding tumor tissue. With this tool tumor cells are somewhat heated until they boil and become inert.

Introduction: Radio frequency ablation (RFA) followed by radiotherapy (N = 80); Group 3: Chemotherapy with RFA (N = 86); Group 4: Radiotherapy alone (N = 65); and Group 5: Chemotherapy plus chemotherapy (N = 86) during 9-year period (2000–2009). Patients' characteristics, local recurrences and overall and disease-free survivals were compared.

Results: In total, 386 patients were selected for study since December 2000. Mean size of tumors were 5 ± 3.1 (range 2.3–8.2 cm). Follow-up range was from 0.5 to 62 months. Survival rate of Group 1: Only percutaneous RFA was 83% at 1 year, 63% at 2 years and 42% at 3 years; for Group 2: RFA and EBRT 96% at 6 months, 80.8% at 1 year, 62.4% at 2 years, and 51.1% at 3 years; for Group 3: Patients treated RFA with chemo therapy 80% at 1 year, 63% at 2 years and 52% at 3 years; Group 4: With radiotherapy alone 55% at 1 year, 33% at 2 years, and 20% at 3 years; for Group 5: Similar patients treated with chemoradiation 61% at 1 year, 45% at 2 years and 22% at 3 years. Irrespective of stages, patients with tumor size 5 cm (N = 25) had an average survival 17 ± 5 months. Local recurrence occurred in 2.8% having tumors size 5 cm. 19 developed pneumothorax and 35 had lung infections, 7 of them had fatal. A total of 24 patients died of co morbids diseases while 77 died of disease progression within 3 years following RFA and EBRT or chemotherapy or RFA alone.

Conclusion: The RFA followed by EBRT or RFA along with adjuvant or neo adjuvant chemotherapy for inoperable NSCLC has a relatively low rate of complications that are easily managed and above all survival has improved compared with other combination therapy, i.e. chemoradiation. NB: RFA plus chemotherapy was only applied in stage II and III.
Results

analyzed in the aspect of acquired resistance development. timing, clinical manifestations, and the association of EGFR genotype were taken gefitinib more than 6 months duration. All clinical data were obtained

Methods

acquired resistance to gefitinib in NSCLC retrospectively.

Introduction

even sometimes dramatic responses to EGFR-TKIs gefitinib or erlotinib will

Conclusion

is 9.3 rate is 63.8%. The survival time after the development of acquired resistance

Results

detected by polyacrylamide gel electrophoresis method.

detected by the PCR-direct DNA sequencing method. UGT1A1*28 was

Methods

there are no homo and complex hetero type. All wild/*6 hetero/*27 hetero/*28 hetero were 8 (35%/6) (26%)/3 (13%)/6 (26%), respectively. The mean nadir were as follows: leukocyte 3512/2167*/3467/2017*, neutrophil 2192/1138/2541/998*, thrombocyte 15.5/14.4/21/12, hemoglobin 10.6/9.9/10.8/10.6. Grade 3/4 toxicities of leucopenia were 0(0%)/3(50%)/

Introduction

of the UDP-glucuronosyltransferase 1A1 (UGT1A1), UGT1A7, and UGT1A9 genes confer individual differences in

Conclusion

be promptly recognized and addressed rapidly and effectively. Respiratory failure and ARDS are rare but serious complications that should

Results

with examination of tissue obtained by surgical resection. Conclusion Accurate cell typing by specimens obtained at fibroptic bronchoscopy may be extremely difficult. If clearcut morphological criteria can not be satisfied, the diagnosis of “lung cancer . non-small cell” type should be made.

Clinical characteristics of acquired resistance to gefitinib in non-small cell lung cancer

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Introduction

The NSCLC patients who experienced good clinical responses even sometimes dramatic responses to EGFR-TKIs gefitinib or erlotinib will inevitably develop acquired resistance. However, the clinical definition of acquired resistance is not clear. We investigated the clinical characteristics of acquired resistance to gefitinib in NSCLC retrospectively.

Methods

We analyzed four hundred and forty NSCLC patients who had a diagnosis of lung cancer following talc slurry. Conclusion Accurate cell typing by specimens obtained at fibroptic bronchoscopy may be extremely difficult. If clearcut morphological criteria can not be satisfied, the diagnosis of “lung cancer. non-small cell” type should be made.

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Comparison of preoperative and postoperative histopathological classification in the lung cancer

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Introduction

To compare the preoperative classification of lung carcinoma made on histological specimens by Fiberoptic bronchoscopicy(FOB)with the postoperative classification made on resected specimen and how often was used term of NSCLC.

Methods

We reviewed the records 116 patients who had a diagnosis ofthe lung cancer made by fiberoptic bronchoscopic biopsy (at Yedikule Chest Hospital, Istanbul in 2009) and who underwent a lung resection. Postoperative histological classification were made according to the WHO classification of the lung tumours.

Results

Fifty one of 84 squamous carcinoma, 1 of 13 adenocarcinoma and 8 of 9 carcinoid tumours were correctly typed with the small biopsy obtained by FOB. Forty eight patients who had a diagnosis of lung cancer established by fibroptic bronchoscopy were labelled as NSCLC, 69%, 25% and 6% of them were misdiagnosed squamous carcinoma, adenocarcinoma and other tumour type respectively with

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Results

Fifty one of 84 squamous carcinoma, 1 of 13 adenocarcinoma and 8 of 9 carcinoid tumours were correctly typed with the small biopsy obtained by FOB. Forty eight patients who had a diagnosis of lung cancer established by fibroptic bronchoscopy were labelled as NSCLC, 69%, 25% and 6% of them were misdiagnosed squamous carcinoma, adenocarcinoma and other tumour type respectively with examination of tissue obtained by surgical resection. Conclusion Accurate cell typing by specimens obtained at fibroptic bronchoscopy may be extremely difficult. If clearcut morphological criteria can not be satisfied, the diagnosis of “lung cancer. non-small cell” type should be made.

Cardio-pulmonary complications post talc pleurodesis: the lung center of the Philippines experience

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Introduction

Numerous studies have documented overall effectiveness and safety of chemical pleurodesis using variety of agents. Although reports regarding complications post-talc pleurodesis were minimal, concerns on the adverse effect profiles remains, especially on occurrences of serious and life threatening respiratory insufficiency and ARDS following talc pleurodesis.

Methods

Records of patients admitted at LCP who underwent talc pleurode-
sis from January 2008 to December 2009 were reviewed and all complications post pleurodesis were noted.

Results

A total of 96 charts of patients admitted at LCP who underwent pleurodesis from January 2008 to December 2009 were reviewed. The mean age was 57 ± 14 y/o with male predominance compared to female at 65 (67.7%) and 31 (32.3%) respectively. Of the total procedures evaluated, 43 (44.7%) involved all post procedure complications, 30 (31.25%) patients developed minor complications while 13 (13.54%) had major complications. There was no statistically significant association noted with age, sex, smoking history, co-morbid illness, underlying disease, and method of pleurodesis, while chest tube drainage time more than 7 days was noted to be associated with greater incidence of major complications which was statistically significant. Most common minor complications were fever (21.9%), followed by tachycardia (20.8%), chest pain (13.5%) and dyspnea (9.4%). The top 3 major complications were hypoxemia, hypotension and pneumonia. There were 2 (2.1%) patients who died post pleurodesis that is believed to be related to ARDS following talc slurry.

Conclusion

Talc pleurodesis is an effective agent for chemical pleurodesis but not without adverse effects. Cardiovascular complications are potentially avoidable by proper patient selection and preparation prior to talc pleurodesis. Respiratory failure and ARDS are rare but serious complications that should be promptly recognized and addressed rapidly and effectively.

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CHANGE IN CLINICAL OUTCOME OF EXACERBATION OF BRONCHIECTASIS ON ADDITION OF NEBULIZED GENTAMICIN TO SYSTEMIC ANTIBIOTIC

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Introduction Nebulized antibiotic is an established safe and effective therapy for bronchiectasis. Gentamicin is considered among the most useful classes of antibiotics for treating pseudomonas aeruginosa infections. The major drawback of aminoglycosides is the need for their relatively high dose intravenous administrations which carries the potential systemic toxicity when gentamicin is given intravenously in maximum safe doses, only relatively low sputum concentration are achievable. These limitations can be circumvented by direct delivery of aerosolized antibiotic to the airways.

Methods This study was carried out in NIDCH Dhaka. In total, 65 patients were taken initially for the study. Randomized into two groups 35 in group A received nebulized gentamicin in addition to systemic antibiotic and 32 in group B received systemic antibiotic with placebo nebulization. Three from group A and eight from group B were excluded as they failed to attend their follow-up visit. So, finally 30 patients in group A and 24 patients in group B completed the study. We evaluated the patients for clinical outcome at day 3, 7, 14 and 21 and categorized them as: • resolved – resolution of S/S of acute exacerbation; • improved – not fully resolved; • not improved – if no change or deterioration of S/S.

Results Clinical outcome at different time interval showed that addition of nebulized gentamicin to systemic antibiotic enhances recovery rate compared to systemic antibiotic alone. At all level of evaluation, the rate of recovery was significantly higher in group A than that in group B (P = 0.05, p = 0.023 and p = 0.020 respectively). Though new wheeze and chest tightness developed following administration of nebulized gentamicin in five cases of group A, it did not affect overall lung function status as revealed by no significant change in FEV1.

Conclusion (1) Addition of nebulized gentamicin to systemic antibiotic improve clinical efficacy compared to only systemic antibiotic. (2) It can reduce hospital stay when used as adjuvant with systemic antibiotic for the treatment of exacerbation of bronchiectasis.

THE EFFECT OF IMMUNO-MODULATOR NUTRITION, AMONG MECHANICALLY VENTILATED PATIENTS DUE TO SEVERE COMMUNITY ACQUIRED PNEUMONIA. A DOUBLE-BLIND, RANDOMIZED, CONTROLLED TRIAL

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Introduction Immune-modulator nutrition may decrease mortality among patients who are mechanically ventilated due to severe Community Acquired Pneumonia (CAP).

Methods We compared an immuno-modulator nutrition and standard feeding formula to determine the effect on in-hospital mortality as well as 30 days mortality among mechanically ventilated patients due to severe CAP. The number of ventilator days, ICU stay, as well as clinical parameter (Clinical Pneumonia Infection Score (CPIS) and PaO2/FiO2 ratio from Arterial Blood Gas) was also compared. In total, 38 eligible patients were randomized, double blind, to receive either immuno-modulator nutrition (Supportan SP) or standard feeding formula (SF). Follow-up was done on day 1, 4 and 7 on CPIS and PaO2/FiO2 ratio.

Results Primary outcome was mortality. No significant difference noted between the two groups (p = 0.64; 95% CI: -0.18 to 0.28). The 30 day mortality on 32 patients revealed 2 patients (12.5%) died on SF group and 1 patient (6.25%) on SP group (p = 0.52; 95% CI: -0.14 to 0.28). The mean ventilator days on the SF group and SP group was 7.44 days and 5.47 days respectively (p = 0.15; 95% CI: -0.75 to 4.69), although not significant, it suggests a trend favoring SP group. The mean ICU stay in the SF group was noted to be significantly shorter (7.05 days) than in the SF group (10.84 days) (p = 0.04; 95% CI: 0.19 to 7.48). The CPIS and PaO2/FiO2 ratio were done on day 1, 4 and 7. On day 1, the mean PaO2/FiO2 ratio was still significantly higher on the SP group (p = 0.0001; 95% CI: -93.54 to -36.79); while the mean CPIS was still the same with baseline (p = 0.43; 95% CI: -0.58 to 1.32). On day 4, no significant difference was noted (p = 0.63; 95% CI: -109.85 to 66.87 and p = 0.46; 95% CI: -1.26 to 2.18, respectively), as well as those on day 7 (p = 0.47; 95% CI: -81.71 to 168.05 and p = 0.47; 95% CI: -2.07 to 4.67, respectively).

Conclusion We found no difference on mortality between SF and SP group. However, it suggests trend of earlier extubation and significant shorter in ICU stay, in patients who received immuno-modulator nutrition.

PREDICTION EQUATIONS FOR LUNG FUNCTION IN HEALTHY, NON-SMOKING MALAYSIAN POPULATION

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Introduction Several equations to predict lung function of individuals of different population are available. However it is desirable that lung function laboratories use reference equations that most closely describe the population they test. The objective of the study was to develop a prediction equation for the Malaysian non-smoking population.

Methods Spirometry was performed on a total of 1483 “healthy”, lifetime non-smoker volunteers (386 males and 1097 females) All measurements met the ATS acceptability and reproducibility criteria. Prediction equations were derived for both men and women for FVC and FEV1. The equations were validated on a new group of subjects (n = 532, 222 males and 310 females) who met the same inclusion and exclusion criteria as the main cohort.

Results The correlation coefficient of the measured and reference values based on published equations for men and women were between 0.65 and 0.67 for FEV1 and 0.60 and 0.67 for FVC (all p < 0.05). The values were lower than the reference equations of ECCS, Knudson, Crapo and NHANES III. There was a positive correlation between the measured values and values derived from the new prediction equations (0.62 for FEV1 and between 0.66 and 0.67 for FVC, all p < 0.05) for both men and women with a smaller bias and limits of agreement compared to the above published equations.

Conclusion Reference equations derived from local spirometry data is more appropriate than generally used equations based on data from previous studies in different population. This study is supported by MOSTI (Ministry of Science, Technology and Innovation) grant.
**I-ROAD COULD BE EFFICIENT IN PREDICTING SEVERITY OF COMMUNITY ACQUIRED PNEUMONIA (CAP) OR HEALTHCARE-ASSOCIATED PNEUMONIA (HCAP)**

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**Introduction**

Patients with severe asthma (experiencing previous hospital admissions and/or daily symptoms) have occasionally been seen with poor or weak complaints. Several studies have analyzed the psychiatric status of the patients with severe asthma, but few studies have The Japan Respiratory Society (JRS) has proposed new predicting scores, called the I-ROAD system for Hospital acquired pneumonia (HAP) in 2008. Depending on the presence of the parameters listed below, patients with HAP were stratified into those with high, moderate or low-risk. The high-risk group was defined as patients with three or more of the following risk factors: ‘malignant tumor or immuno-compromised status’, ‘impaired consciousness’, ‘requiring fraction of inspired oxygen (FiO2) > 35% to maintain SpO2 > 90%’, ‘male aged 70 years or older, or female aged 75 years or older’ and ‘oliguria or dehydration’. The moderate-risk group was defined as patients with any of the secondary risk factors as follows: ‘CRP ≥ 20 mg/dl’ and ‘extent of infiltration on CXR covers at least 2/3 of one lung’. The low-risk group was defined as all other patients. The aim of this study was to confirm whether I-ROAD is useful in predicting severity of CAP and HCAP.

**Methods**

All patients with an admission diagnosis of CAP and HCAP from January 2009–July 2009 were reviewed. Clinical and laboratory features at presentation in electrical medical records were used to calculate severity scores using the CURB-65 (2004), A-DROP (2005) and I-ROAD (2008).

**Results**

Consecutive 314 patients (53% CAP) of mean age 77.5 years were included in the analysis. Nineteen (11.7%) patients with CAP and seventeen (11.7%) patients with HCAP died. The ROC analysis for predicting mortality at 30 days showed that I-ROAD score has similar predictive accuracy for short-term mortality to CURB-65 and A-DROP in patients with CAP, but short-term mortality of the patients with HCAP are not similar to them.

**Conclusion**

The JRS I-ROAD could be used to assess severity of CAP, and gives similar results to CURB-65 and A-DROP.

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**THE PROFILE OF PATIENTS WITH ACUTE EXACERBATION OF ASThma AND COPD PRESENTING TO THE EMERGENCY ROOM: A TERTIARY HOSPITAL EXPERIENCE**

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**Introduction**

Numerous asthma and COPD patients repeatedly return to hospital ED for urgent therapeutic care despite referral to their primary care provider. This study was aimed to identify these respective populations with frequent ED visits and assess the current therapeutic management of acute exacerbation of asthma and COPD at Hospital Kuala Lumpur, Malaysia.

**Methods**

The demographic and medical data was prospectively collected and recorded in March 2010 using convenient sampling, and then descriptively analyzed using SPSS version 16. Appropriate statistical analysis were applied with p < 0.05 was considered as significant.

**Results**

The study recruited 126 patients (male 51.6%) with 87.3% asthmatics and 12.7% COPD. Malays significantly presented to ED the most (65.1%) followed by Indians (25.4%) and Chinese (7.1%). Most patients were between 17–64 years old (72.2%) with mean age of 41.5. About 17.5% were smokers (16.7% ex-smokers) with an average duration of smoking 26.73 years and 21.95 pack-years. For occupational data, 52.5% were belonging to non-professional group. About 85.5% asthma and 87.5% COPD patients had visited ED last year with average visit of 3.44 and 7.3 times and mean number of hospitalization was 1.68 and 1.33, per year, respectively. About 51.6% patients without scheduled appointments and 15.1% were not on any prescribed medications for asthma or COPD. Among patients with prescribed medications, 99.1% were on SABA and 66.4% on inhaled corticosteroids. Respiratory infections remained as main triggering factors of admission (43.7%), followed by weather (30.2%) and air pollution (5.6%). Average duration of treatment was about 50 minutes with mean direct therapy cost of RM15 per patient excluding the standard admission fee. Whil HR monitoring, the level of oxygen saturation and PEFR were significantly improved post treatment. Oxygen-driven nebulised SABA and IV hydrocortisone were the mainstay of treatment. However, the use of an anticholinergic as a step up approach in nebulised treatment was underused. Most discharged patients were given oral SABA (87.3%) and prednisolone (88.1%). PEFR measurement was not practiced post treatment regularly.

**Conclusion**

Limited number of staff contributed towards omitted monitoring steps. Involvement of ED pharmacists in respective therapeutic management is highly suggested.

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VALIDATION OF LINEAR REGRESSION ESTIMATES OF PLEURAL EFFUSION VOLUME TO BE DRAINED USING ULTRASONOGRAPHY

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Introduction Fluid volume is an important factor when considering pleural drainage. However, there is limited literature regarding accurate quantification of pleural effusion by ultrasonography. In a study by Visperas et al, they quantified the pleural effusion volume by measuring the length, width, and depth of the fluid, while the patient was in a sitting up-right position, and the actual volume drained. They postulated a linear regression equation to quantify estimate the pleural fluid volume that will be drained. Equation 1: \( y = 0.52361x + 173.71958 \), where \( x \) is the prevolume (in cm³); Equation 2: \( y = 0.76574x + 212.73538 \), where \( x \) is the difference of the volume post-and pre-thoracentesis (in cm³). It is the objective of this study to determine whether ultrasound overestimates or underestimates the amount of pleural fluid to be drained.

Methods Thirty-four consecutive patients scheduled for ultrasound-guided thoracentesis last August 1, 2009 to April 30, 2010 were included. The actual amount of pleural fluid drained was compared to the calculated volume using the following linear regression equations 1 and 2. Data were analyzed in SPSS version 10 for Windows. Correlation of the different variables under study was done using Pearson Correlation test, and paired T-test.

Results Of the 34 patients, the actual volumes drained had a mean of 583.91 ± 295.83 mL. The calculated volumes using equations 1 and 2 were 603.71 ± 195.92 mL and 638.54 ± 210.68 mL, respectively. The correlation of the actual volume drained with the sonographically determined volume using equations 1 and 2 showed that there was no significant correlation between actual amounts of pleural fluid drained the two volumes with \( r = 0.756 \) and \( r = 0.843 \), respectively. Both calculated volumes were larger than the actual volume drained. However, the comparison of the actual amount of pleural fluid drained with the calculated volume using equation 1 and equation 2 showed that there was no significant difference as proven by all p-values > 0.05.

Conclusion Using equations 1 and 2, ultrasonography overestimates the amount of pleural fluid prior to thoracentesis. The amount of overestimation, however, is not statistically significant. In effect, ultrasonography correlates well with the actual volume drained.

LOCAL ADMINISTRATION OF HERBAL MEDICINES IN TREATING INSOMNIA DISORDER: RESULTS FROM A CROSS-SECTIONAL STUDY IN THE HABIGANJ DISTRICT OF BANGLADESH

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Introduction Insomnia disorder is the most common sleep disorder which affected more than 18 300 000 people in Bangladesh. 7 600 000 people develop chronic insomnia disorder with symptoms of difficulty falling asleep for more than 30 minutes and last for more than 1 month. Patients with insomnia disorder in Bangladesh took 290 000 sleeping pills each year for insomnia disorder. However, there were still some side effects about sleeping pills such as allergy, amnesia, hallucination etc. Because of the side-effects of modern medicine and because of the inability of modern medicine to cure insomnia disorder, international scientific interest has re-focused on the traditional uses of medicinal plants to find effective cure for insomnia disorder as well as hundred of other disorders. A study of the traditional health practitioners in the Habiganj district of Bangladesh suggested that some of the herbal medicines prepared from medicinal plants might be quite effective for insomnia disorder.

Methods Information was collected through a series of interviews with the traditional health practitioners, rural and urban people. Field notes were recorded on the medicinal plants and their uses; following the methodology of Bhat et al. (1990) and Martin (1995). The identified medicinal plant specimens were stored at the Bangladesh National Herbarium; under the author's collector series.

Results The following medicinal plants or plant parts were found to be used as remedy for insomnia disorder: Cyrtandra cupulata Ridl., Bacopa monnieri (L.) Pennell, Ocimum gratissimum L., Lawsonia inermis L., Cinnamomum camphora (L.) Sieb., Aconitum napellus L., Datura metel L., Mimosa pudica L., Achyranthes aspera L., Piper betle L., Randia dumerotum (Retz.) Poir., Ficus glomerata Roxb., Nigella sativa L., Agaricus arbutus Zeller, Ipomoea aquatica Forsk., Stephania japonica (Thunb.) Miers, Withania somnifera (L.) Duna, Cannabis sativa L., Calamus rotang L., Uraria picta (Jacq.) DC., Sesamum indicum L., Asparagus racemosus Willd., Abrus precatorius L., and Brassica napus L.

Conclusion Information on indigenous use of medicinal plants has led to discovery of many medicines in use today. It is important that modern scientific studies be conducted on these medicinal plants towards isolation and identification of compounds through which insomnia disorder can be effectively treated.

SHORT SLEEP DURATION IS ASSOCIATED WITH ELEVATED 24-HOUR AMBULATORY BLOOD PRESSURE INDEPENDENT OF THE EFFECT OF OBSTRUCTIVE SLEEP APNEA (OSA) IN NORMAL WEIGHT ADOLESCENTS

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Introduction Existing data on the association between sleep duration and blood pressure in adolescents are inconsistent and conflicting. This study aims to determine the relationship between sleep duration and 24-hour ambulatory blood pressure in adolescents.

Methods Subjects aged 10–17.9 years were recruited from the community. They underwent nocturnal polysomnography (PSG) and 24-hour ambulatory blood pressure monitoring (ABPM) on the same day. Daytime, nocturnal and 24-hour average systolic and diastolic blood pressure (SBP and DBP) were converted to z score with reference to height and gender according to normal reference. A 7-day sleep diary was completed prior to PSG. Daily sleep duration was defined as the average of nocturnal sleep duration plus the average of daytime nap duration over 1 week. Subjects with body mass index (BMI) greater than the 85th percentile of the local normal reference were classified as overweight. Those who were overweight and had an obstructive sleep apnoea hypopnoea index (OAH) greater than or equal to 5 were excluded from the analysis.

Results One hundred forty one subjects (86 boys) with a mean (SD) age of 14.3 (1.8) years were recruited. They were divided into 4 groups according to their daily sleep duration (<7.5 vs. 7.5–8.5 vs. 8.5–9.5 vs. >9.5). Subjects with shorter sleep duration tended to have higher daytime SBP (p < 0.001), nocturnal SBP (p = 0.002) and 24-hour SBP (p < 0.001). Similar results were found after converting the BP data into z score (p = 0.005, 0.030 and 0.006 respectively). Multiple linear regression analyses showed that sleep duration was negatively associated with daytime SBP ([SE] = −1.15(0.49); p = 0.019), nocturnal SBP ([SE] = −1.59(0.53); p = 0.003) and 24-hour SBP ([SE] = −1.27(0.46); p = 0.006) after adjusting for confounding factors including gender, height, BMI z score, physical activity level and log-transformed OAH.

Conclusion Short sleep duration was negatively associated with elevated ambulatory systolic blood pressure in adolescents independent of the effect of OSA and obesity.
THE ASSOCIATION OF NOCTURNAL CARDIAC ARRHYTHMIAS WITH OBSTRUCTIVE SLEEP APNEA
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Introduction The obstructive sleep apnea (OSA) patients commonly develop cardiac arrhythmias and conduction abnormalities such as premature ventricular contractions, atrio-ventricular blocks and sinus arrests during sleep. We explored association of nocturnal cardiac arrhythmias in OSA. Aim of the study was to identify the types of cardiac arrhythmias encountered during sleep and to evaluate their association with severity of OSA.

Methods Hundred consecutive polysomnography confirmed patients were studied. Subjects of 18 years or more with AHI 5 or more with no prior history of congestive heart failure or use of CPAP therapy were included. The integrated electrocardiogram recorded through Lead I bipolar ECG of polysomnography was evaluated for detecting cardiac arrhythmias. ECG data was analyzed for slowest, fastest and mean heart rates along with ventricular, atrial and conduction delay arrhythmias. Fifty age and sex matched non OSA subjects with AHI less than 5 were taken as controls for the study.

Results We found that nocturnal cardiac arrhythmias were significantly more common in OSA patients than those in control subjects, i.e. 37% and 18% respectively. The nocturnal cardiac arrhythmias were more common in middle age group. Fewer subjects had cardiac arrhythmia with increasing age. Ventricular arrhythmias were the common type of arrhythmia observed and premature ventricular contractions were most common arrhythmia as seen in 31% cases. Other arrhythmias seen were: bigeminy in 3% cases, non-sustained ventricular tachycardia in 1% cases, sinus pause in 12%, atrio-ventricular block in 6% and intra ventricular conduction delay in 1% cases. The prevalence of cardiac arrhythmias increased with increasing severity of OSA.

Conclusion Cardiac arrhythmias were significantly more common in OSA patients than those in non-OSA control subjects. Premature ventricular contractions were the most common arrhythmia observed. Detection of nocturnal premature ventricular contractions in an individual should prompt clinicians for investigation to rule out OSA, as the treatment of the latter may avert pacemaker or cardioverter-defibrillator implantation in such patients. Arrhythmias like sinus pause and IInd degree atrio-ventricular block could be the potential harbinger for increased sudden nocturnal death in OSA patients.

APICAL LOCALIZATION OF ZINC TRANSPORTER ZNT4 IN HUMAN AIRWAY EPITHELIAL CELLS AND ITS LOSS IN A MURINE MODEL OF ALLERGIC AIRWAY INFLAMMATION
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Introduction Some studies have shown decreased plasma and hair Zn in human asthma which may indicate a state of zinc deficiency. We have shown, in a well characterized murine model of allergic airway inflammation, that there were marked losses of ZnT4 in the inflamed airway epithelium (AE); when these mice were placed on low Zn diets, there was excessive cell death in the AE, and increased airway inflammation. We have proposed that ZnT4 protects the AE from premature cell death and loss of this ZnT4 contributes to the AE fragility and inflammation in asthma. A screen of whole lung gene expression of the two major families of ZIP influx transporters and ZnT efflux transporters, indicated a marked loss of ZnT4 in the inflamed lungs. The hypotheses being tested here are 1) AE Zn is normally stored in vesicles within the apical cytoplasm, 2) ZnT4 is responsible for transporting Zn into these bodies and 3) loss of ZnT4 expression in asthma may result in a failure of Zn to be sequestered.

Methods Human nasal epithelial brushings were obtained from healthy, consenting donors. Lung tissue was obtained from Balb/c mice sensitized and aerosol-challenged with ovalbumin or saline (Controls). Distributions of Zn were determined by Zinquin fluorescence or in vivo selenite autometallography (Se-AMG). Distributions of ZnT4 were determined by immunofluorescence. ZnT4 protein during airway inflammation would then result in failure to sequestrate Zn, depleting critical storage pools of Zn in the lung and airways, leading to increased AE damage and cell death. This work was supported by NHMRC Project Grant 519206.
ENDOGENOUS STEM CELL POPULATION IN ADULT HUMAN LUNGS

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Introduction After severe alveolar epithelial damage, alveolar type II cells (ATII) are known to proliferate (hyperplasia) and serve as the progenitor for alveolar type I cells. However, the origin of ATII has not been identified in adult human lungs. The aim of this study is to isolate a lung endogenous stem cell population that has a capacity to differentiate into ATII.

Methods First, we established a new preservation solution to keep putative tissue stem cells and their niches in the lungs (1). Using this solution, we preserved surgical specimens of human lungs with various diseases. Then, single cell suspensions were obtained by an enzymatic digestion of the preserved tissues. Isolated lung cells were cultured on feeders. Expanded colonies were picked up, and further examinations were performed. FACS was utilized to analyze the cell surface antigens of the colony-forming cells. Colony-forming cells were cultured on extracellular matrix with growth factors to induce differentiation into ATII. This work was supported by a grant from the German Competence Network for Community-Acquired Pneumonia.

Conclusion Community-acquired pneumonia remains a major cause of mortality in developed countries. There is much discrepancy in the literature regarding factors influencing the outcome in the elderly population. Multiple data were derived from a multicentre prospective study initiated by the German Competence Network for Community-Acquired Pneumonia. Patients with community-acquired pneumonia (n = 4,647; 2,298 aged < 65 years and 2,349 aged ≥65 years) were evaluated; of whom 71.4% were hospitalised and 28.6% treated in the community. Clinical history, residence status, course of disease and antimicrobial treatment were prospectively documented. Microbiological investigations included cultures and PCR of respiratory samples and blood cultures. Factors related to mortality were included in multivariate analyses.

Results The overall 30-day mortality was 6.6%. Elderly patients exhibited a significantly higher mortality rate that was independently associated with the following: age; residence status; confusion, urea, respiratory frequency and blood pressure (CURB) score; comorbid conditions; and failure of initial therapy. Delaying age remained predictive of death in the elderly. Nursing home residents showed a four-fold increased mortality rate and an increased rate of gram-negative bacillary infections compared with patients dwelling in the community.

Conclusion The CURB score and cerebrovascular disease were confirmed as independent predictors of death in this subgroup. Age and residence status are independent risk factors for mortality after controlling for comorbid conditions and disease severity. Failure of initial therapy was the only modifiable prognostic factor.

OUTCOME OF COMMUNITY-ACQUIRED PNEUMONIA: INFLUENCE OF AGE, RESIDENCE STATUS AND ANTIMICROBIAL TREATMENT

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Introduction Community-acquired pneumonia remains a major cause of mortality in developed countries. There is much discrepancy in the literature regarding factors influencing the outcome in the elderly population. Multiple data were derived from a multicentre prospective study initiated by the German Competence Network for Community-Acquired Pneumonia. Patients with community-acquired pneumonia (n = 4,647; 2,298 aged < 65 years and 2,349 aged ≥65 years) were evaluated; of whom 71.4% were hospitalised and 28.6% treated in the community. Clinical history, residence status, course of disease and antimicrobial treatment were prospectively documented. Microbiological investigations included cultures and PCR of respiratory samples and blood cultures. Factors related to mortality were included in multivariate analyses.

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Conclusion The CURB score and cerebrovascular disease were confirmed as independent predictors of death in this subgroup. Age and residence status are independent risk factors for mortality after controlling for comorbid conditions and disease severity. Failure of initial therapy was the only modifiable prognostic factor.

ASSESSMENT OF THE APPROACH OF PHYSICIANS ON MANAGEMENT OF HOSPITAL ACQUIRED PNEUMONIA AT PHILIPPINE HEART CENTER

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Introduction Hospital-acquired pneumonia (HAP) attributes to 15% of all nosocomial infections. Mortality rate is as high as 30–70%. Guidelines for the management of adults with HAP were recently updated. Despite the emergence of evidence-based medicine, the use of these guidelines in daily clinical practice is still limited. Currently, there is no literature published regarding the impact of adherence to the guidelines and clinical outcomes of HAP.

Methods A total of 40 patients (Male: 50%; Female: 50%) admitted and diagnosed with HAP at our Center were followed up to investigate the rate of adherence of physicians on the diagnosis and treatment of HAP based on Level I and II ATS/IDSA 2008 recommendations and to determine its association with outcome (mortality, mechanical ventilation, ICU stay, hospital stay). Adherence to diagnostics and therapeutic management were computed per patient. Management of patients was classified as adherent if it meets more than 70% of the guidelines that should be enforced.

Results In this cohort, 55% of the physicians adhered to the currently recommended guidelines. Age, gender, and co-morbid conditions such as hypertension, diabetes mellitus, COPD, CKD and cancer, and nosocomial pneumonia were not statistically associated with the outcome of the study. A total of 30% of the subjects were eventually mechanically ventilated (p = 0.525). A total of 5% of patients who adhered to the recommendations consequently died during hospitalization (p = 0.073). Similiarly, Univariate Analysis of Variance revealed that there is no significant association of adherence to length of ICU stay and hospital stay (p = 0.807, 0.802 respectively). Of the level I and II current recommendations, request of Blood Culture showed significant association with adherence (p = 0.045). However, Logistic regression analysis showed that there is no association of adherence in doing blood culture to mortality.

Conclusion This analysis showed that compliance with the currently recommended ATS/IDSA recommendations is 55%. Blood Culture is the most significantly associated recommendation. Rate of endotracheal intubation, length of ICU and hospital stay and mortality however was not significantly associated with adherence.
ACINETOBACTER BAUMNII AS CAUSATIVE AGENT OF PNEUMONIA

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Introduction Despite of the detailed study, the role of Acinetobacter baumanii pathogen as the ubiquitous opportunistic nosocomial pathogen is still appreciated. The most of epidemiological aspects of this infection are still discussed though the problem of the microbiology characteristics of this pathogen and some unknown microbiology interest. It is often isolated in immunocompromised hosts in different forms of hospital-acquired infections, but more often it was recognized as the main pathogen agent of hospital-acquired pneumonia. The aim of our research was to establish clinical significance of A. baumanii in development of hospital-acquired pneumonia, to define its epidemiology and to characterize antimicrobial agents resistance pattern.

Methods We made 1-year surveillance of all hospital-acquired pneumonias (HAP) in adult patients in the main clinics of Vladivostok (Hospital D1, D2), defined by standard diagnostic methods. All isolates of A. baumanii were tested for antimicrobial agents resistance according to NCCLS. The strains with the same antimicrobial agents resistance pattern were checked to clonality by pulsed-field gel electrophoresis (PFGE).

Results During 2008–2009, we studied all cases of HAP in 450 adult patients (~60 years) admitted to ICU and revealed that A. baumanii has taken the first place in HAP structure (29.3%, 132 patients). The second place was in Pseudomonas aeruginosa (11.7%, 53 strains). Mostly (58.4% vs 24%) the bacterial pathogens were represented with the species S. pneumoniae (58.4%/42%), H. influenzae (15.0%/21%), M. catarrhalis (26.2%/7%). Among the viral pathogens the most often was metapneumovirus in young adults (23%), and influenza virus in aged patients (18%). The most prevalence bacteria were genotyped and there were revealed the relatedness of the isolates. Antimicrobial agents resistance was checked by PFGE and MLST for the most frequent clones.

Conclusion Acinetobacter baumanii should be studied to define the role in hospital-acquired infections, as well as it confirms the fact that the importance of local surveillance programs in correctly guiding empiric therapy and local intervention programs in attempt to reduce antimicrobial resistance.
VIRAL AETIOLOGY AND CLINICAL CHARACTERISTICS OF COMMUNITY-ACQUIRED PNEUMONIA IN ADULTS IN GUANGZHOU, CHINA

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Introduction
Epidemiological surveillances in recent have shown that viral pneumonia is more commonly reported than previously estimated.

Methods
Consecutive adult patients admitted to the First Affiliated Hospital of Guangzhou Medical College (Guangzhou city, China) and diagnosed of CAP during November and December of 2009 were included. Swab samples were routinely performed by hemagglutination inhibition assay or indirect immuno-fluorescence. Swab samples were processed for study of respiratory viruses through rapid cell culture system and reverse transcription polymerase chain reaction assays. Viral aetiology was considered definitive if at least one of the above tests was positive.

Results
Overall, 149 CAP patients were enrolled, with 84 males. The median (IQR) ages were 60 (35–77) years. Viral aetiology was established in 48 cases. Forty-four patients were infected by a single virus (influenza A, 24 cases; influenza B, 5 cases; parainfluenza virus type 3, 11 cases; parainfluenza virus type 1 and adenovirus, 2 cases each) and four cases by two respiratory viruses. Twenty-six cases of viral pneumonia patients had at least one underlying condition. Fever ≥38°C (66.7%), fatigue (64.6%), purulent sputum (52.1%), sore throat (45.8%), dyspnea (41.7%), and cough (41.7%) were the most common symptoms in viral pneumonia patients. Some influenza A or parainfluenza virus type 3 infected patients manifested hemoptysis and chest pain. Dyspnea and gastrointestinal symptoms were also common in influenza and parainfluenza virus type 3 infected patients. Viral pneumonia patients were more probably to show CURB-65 score ≥2 and complications than viral negative patients, though without any statistical significance (P = 0.177 and P = 0.063). Oxygen therapy and electrolyte disturbances in blood was also more common in viral pneumonia patients than others (P = 0.028 and 37.5% vs. 14.9%, P = 0.002).

Conclusion
Virus was one of the common pathogens of CAP, with influenza A and parainfluenza virus type 3 most common in our study. Clinical character-istics were unable to distinguish between viral etiology and bacterial etiology. It was the same in the discrimination of specified viral pneumonia. Granted by Pro-vincial Major Science and Technology Projects of Guangdong and Municipal Major Science and Technology Projects of Guangzhou.

THE USE OF CURB-65 AS A SEVERITY ASSESSMENT TOOL FOR COMMUNITY ACQUIRED PNEUMONIA AT THE LUNG CENTER OF THE PHILIPPINES

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Introduction
Community Acquired Pneumonia (CAP) is the most common cause of death associated with infectious disease. Locally, it is the leading cause of morbidity and the fifth cause of mortality according to the Department of Health. The initial management decision after diagnosis is to determine the site of care: outpatient, hospitalization in a medical ward, or admission to an ICU. The decision to admit the patient is the most costly issue in the manage-ment of CAP, because the cost of inpatient care for pneumonia is up to 25 times greater than that of outpatient care. It is a well documented fact that significant variation exists among hospitals and among individual physicians occurs. Physicians often overestimate severity and hospitalize a significant number of patients at low risk for death. Because of these issues, interest in objective site-of-care criteria has led to attempts by a number of groups to develop such criteria. The two foremost criteria are the British Tho-racic Society (CURB-65) and the CPG criteria (Community Acquired Pneumonia). The IDSA/ATS committee preferred the CURB-65 criteria because of ease of use and because they were designed to measure illness severity more than the likelihood of mortality. Patients with a CURB-65 score > 2 are not only at increased risk of death but also more likely to have important physi-logic derangements requiring active intervention. These patients should usually be considered for hospitalization. Therefore, the study was done to determine and compare mortality rates of the admitted cases of Community Acquired Pneumonia assessed by the CURB-65 criteria or the Philippine Clinical Practice Guidelines on CAP, and to determine the applicability of CURB-65 as a site-of-care tool in the admission of patients with Community Acquired Pneumonia either at the Ward or the Intensive Care Unit. Methods: All patients seen at the Emergency Room and Outpatient Depart-ment with the diagnosis of Community Acquired Pneumonia were included in the study. Thorough history-taking and physical examination was taken by the ER/OPD fellow whom would determine if the patient has pneumonia. Subsequent laboratories (XRAY, CBC, BUN, ABG) was requested. The study was done for severity assessment: One group was assessed via the CURB-65 criteria, while the other group was assessed using the Philippine Clinical Practice Guidelines for CAP. Severity assessment was done by the ER fellow together with the investigator not more than one hour of the patient’s arrival at the ER/OPD. Patient was followed-up by the investigator within 24 hours of admission (ward or ICU) and until discharge or death.

Results
A total of 206 patients diagnosed with Community Acquired Pneumonia (CAP) were included in the study. The age range for the CURB group is from 18 to 104 years of age with a mean age of 52.33 ± 18.25 years, while in the CPG group, 16 to 97 years of age with a mean age of 57.20 ± 20.85 years. No signifi-cant difference were noted (p = 0.564). No significant difference were also noted in the gender of both groups (p = 0.889). There was a significant difference noted in the presence of comorbidities (p = 0.001), the CURB-65 group had higher percentage of patients with comorbidities (70.9% and 47.6%, CURB group and CPG group, respectively). The presence of previous PTB treatment, Cardiovascular disease and COPD, ranks as the three most common comorbidities. Dyspnea (94.7%), cough (85%) and fever (72.3%) were the three most common symptoms noted. There was no significant differ-ence noted in these symptoms (p = 1.00, 0.697, 1.00, respectively). With regards to the physical findings: crackles (89.3%), tachycardia (44.7%), wheezes (22.3%) were the three most common signs noted. No significant difference were noted in most of the signs, except for “tachycardia” and “hypotension” (p = 0.000, 0.0007, respectively). There were no significant difference in the radiographic findings between both groups. No significant difference were also noted in the complete blood count results be it leukocytosis (p = 0.314), anemia (p = 0.477) and leukopenia (p = 1.00). There is a significant difference in the Blood Urea Nitrogen (p = 0.00002). No significant difference was also noted in the arterial blood gas result: hypoxemia (p = 0.109) and hypercapnia (p = 0.499). For the CURB-65 group, more than half of the population was assessed to have a score ≥2 (In group, 51% for the CURB-65 and group, 56% for the CPG). More than half was assessed to be under the Moderate risk, 56 (56.3%). All of the patients assessed in the lower severity class, either thru the CURB-65 or the CPG, had been discharged improved. The overall mortality rate per group was: 5.8% for the CURB-65 group, 6 out of the 103 patients, and 1.9% for the CPG group, 2 out of the 103 patients. Mortalities were noted only on those with higher severity ratings. On further determination of mortality rate per level of severity, it revealed that those with a CURB-65 score of ≥3 has a mortality rate of 28.6% (6 out of the 21 patients), while those on the CPG, 22.2% (2 out of the 9 patients).

Conclusion
In this study, we determined that all of the mortality came from the higher severity levels: CURB-65 score ≥ 3 (28.6%), CPG- High risk (22.2%), none from the lower severity ratings The CURB-65 criteria is a useful site-of-care tool, though, the usage of CURB-65 criteria does not offer addi-tional benefits compared to the use of the CPG, in fact because of familiarity of physicians with the latter, they are more adapt in using it.

USEFULNESS OF SERUM PROCALCITONIN IN THE DIFFERENTIAL DIAGNOSIS OF BACTERIAL PNEUMONIA FROM EXACERBATION IN PATIENTS WITH INTERSTITIAL LUNG DISEASE

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Introduction
Acute exacerbation has been a major complication of interstitial lung disease (ILD). The rapid recognition of a bacterial pneumonia and an acute exacerbation of underlying ILD appears to be clinically important for proper treatment. Procalcitonin (PCT), a precursor peptide of the hormone calcitonin is commonly detected at elevated levels under bacterial infection conditions. This study was to assess whether or not serum procalcitonin levels were useful as a biomarker for the differential diagnosis of ILD exacerbation from bacterial pneumonia.

Methods
We had planned a prospective observational study. Our study enrolled 21 ILD patients who had presented with recently progressive dyspnea, and newly infiltrates of the chest in underlying ILD.

Results
Nine of them evidenced bacterial pneumonia with high PCT level. Serum PCT levels in ILD exacerbation group were significantly lower than in the pulmonary infiltrate group (the mean value 0.03 ng/ml vs 0.91 ng/ml, 95% [CI]), Sensitivity, specificity, and negative predictive value of serum PCT level were 88.9%, 100%, 92.3% respectively.

Conclusion
The findings of this study suggest that serum PCT value is useful in the differential diagnosis of bacterial pneumonia from exacerbation in patients with interstitial lung disease.

Respirology (2010) 15 (Suppl. 2), 26–54
SERUM MYOSTATIN LEVELS AND NUTRITIONAL STATUS IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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Introduction  It has been well confirmed that malnutrition and muscle wasting are important extra-pulmonary manifestations of chronic obstructive pulmonary disease (COPD), which are recognized as contributing to an increase in morbidity and decrease in quality of life. Myostatin, a transforming growth factor-beta superfamily member, is mainly expressed in skeletal muscle and has been characterized as a negative regulator of skeletal muscle mass. Studies have shown that myostatin is implicated in several diseases involved in muscle wasting and cachexia. Recently, there is evidence of myostatin secretion and circulation in animals and human blood, and more recently, studies have shown that intramuscular myostatin expression accelerated in COPD patients; while levels of circulating myostatin in COPD remain unclear. We therefore analyzed serum myostatin levels to investigate the relationship between circulating myostatin levels and nutritional depletion and muscle wasting in COPD, and the relationship between circulating myostatin levels and systemic cytokines such as tumor necrosis factor (TNF-α) and interleukin (IL)-6 in COPD.

Methods  Fifty-four male patients with stable COPD and twenty-one age-matched, healthy, male control subjects participated in the study. Total-body skeletal muscle mass (SMM) were calculated according to a validated formula by using body weight, height and age. Nutritional status was evaluated by anthropometric measurements and serum protein levels; the former included body mass index (BMI), triceps skin-fold thickness (TSF) and mid-upper arm circumference (MAC), and the latter included serum prealbumin, transferrin and albumin. Serum levels of myostatin, TNF-α and IL-6 were detected by ELISA.

Results  Out of the patients with COPD, 38 ones (59.25%) had malnutrition, with BMI less than 21 kg/m². Serum levels of myostatin were significantly elevated in COPD patients compared with controls (11.51 ± 4.99 ng/ml vs. 6.97 ± 1.70 ng/ml, p < 0.01), and the levels were even much higher in those with malnutrition (12.91 ± 5.07 ng/ml vs. 6.97 ± 1.70 ng/ml, p < 0.01). All the nutritional parameters except of prealbumin were significantly decreased in COPD patients compared with controls (20.66 ± 2.44 kg vs. 24.95 ± 2.35 kg, p < 0.01). There is an inverse correlation between myostatin levels and SMM (r = -0.437, p = 0.001) and a positive correlation between myostatin and TNF-α levels (r = 0.317, p = 0.019) in COPD group, but no correlation between myostatin levels and serum proteins concentrations.

Conclusion  This study demonstrates that circulating myostatin levels were closely related with malnutrition and muscle wasting in patients with COPD.

THERAPEUTIC EFFECT OF LECITHINIZED SUPEROXIDE DISMUTASE (PC-SOD) ON ELASTASE- AND CIGARETTE SMOKE-INDUCED PULMONARY EMPHYSEMA IN MICE

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Introduction  Chronic obstructive pulmonary disease (COPD) is defined by airflow limitation that is not fully reversible and no medication exists that clearly improves the mortality. Oxidative molecules, in particular superoxide anion, are believed to play an important role in COPD-associated abnormal inflammatory response due to increase in the level of pro-inflammatory cytokines and chemokines and pulmonary emphysema due to proteases/antiproteases imbalance and apoptosis. Superoxide dismutase (SOD) catalyses the dismutation of superoxide anion to hydrogen peroxide, which is subsequently detoxified to oxygen and water. Lecithinized SOD (PC-SOD) has overcome a number of previous clinical limitations of SOD, including low tissue affinity and low stability in plasma. In this study, we examine the effect of PC-SOD on elastase- or cigarette smoke-induced pulmonary emphysema, animal models for COPD.

Methods  Severity of pulmonary emphysema in mice was assessed by various methods, such as the number of leucocytes (neutrophils, lymphocytes and alveolar macrophages) in bronchoalveolar lavage fluid (BALF) and enlargement of airspace (increase in mean linear intercept). Lung mechanics were assessed by a computer-controlled ventilator. The pulmonary level of superoxide anion was estimated by electron spin resonance analysis and the level of 8-hydroxy-2′-deoxyguanosine.

Results  Not only intravenous administration but also inhalation of PC-SOD suppressed elastase-induced pulmonary emphysema and dysfunction even when it administered after the development of emphysema. Inhalation of PC-SOD suppressed elastase-induced increase in the pulmonary level of superoxide anion and apoptosis. Inhalation of PC-SOD also suppressed elastase-dependent activation of proteases and induction of expression of pro-inflammatory cytokines and chemokines. We also found that inhalation of PC-SOD suppressed cigarette smoke-induced pulmonary emphysema and dysfunction.

Conclusion  Results suggest that PC-SOD protects against pulmonary emphysema through decreasing the pulmonary level of superoxide anion and resulting inhibition of inflammation, apoptosis and activation of proteases. We propose that inhalation of PC-SOD is therapeutically beneficial for COPD.
Methods  
A total of 31 moderate to severe stable COPD patients as per GOLD guidelines were included. All patients were started on standard inhalational therapy (tiotropium bromide and formoterol) for first 8 weeks. Patients were then randomized into two groups: group 1 (15 patients) received standard inhalational therapy and group 2 (16 patients) received pulmonary rehabilitation in addition to inhalational therapy for the next 8 weeks. The rehabilitation program comprised minimum 90 minutes of supervised exercise training for lower and upper limbs, performed over separate sessions each day, 5 days a week for 8 weeks. The serum high sensitivity C-reactive protein (hsCRP), mid-thigh muscle cross-sectional area by computed tomography (MTCSACT), 6-minute walk test (6MWT) distance were measured at baseline, 8 and 16 weeks.

Results  
The mean hsCRP level in group 1 was 5.41 ± 4.53 mg/L at baseline, 3.52 ± 3.21 mg/L at 8 weeks, 2.65 ± 1.53 mg/L at 16 weeks and the corresponding levels in group 2 were 3.96 ± 4.16 mg/L, 3.01 ± 3.23 mg/L, 2.067 ± 2.19 mg/L respectively. The change in values were not statistically significant (p > 0.05). The mean MTCSACT in group 1 was 103.51 ± 23.68 cm² at baseline, 104.51 ± 23.68 cm² at 8 weeks, 106.75 ± 24.67 cm² at 16 weeks and in group 2 the corresponding levels were 105.82 ± 35.75 cm², 108.14 ± 35.36 cm², 111.97 ± 35.72 cm² respectively. There was significant increase in MTCSACT in group 2 after rehabilitation (p = 0.011). The mean 6MWT distance in group 1 was 428.0 ± 75.72 m at baseline, 484.81 ± 62.98 m at 8 weeks, 474.69 ± 74.96 m at 16 weeks and in group 2 the corresponding levels were 442.61 ± 85.82 m, 489.3 ± 77.86 m, 536.6 ± 69.39 m respectively. In group 2 there was significant increase in 6MWT after rehabilitation (p = 0.006). There was no significant correlation between the tested parameters.

Conclusion  
This study showed that pulmonary rehabilitation improves exercise capacity and muscle mass in COPD patients.
THE INVOLVEMENT OF SINGLE NUCLEOTIDE POLYMORPHISM OF TGF-β1 GENE ON CHRONIC OBSTRUCTIVE PULMONARY DISEASE SUSCEPTIBILITY IN INDIAN POPULATION

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Introduction The main risk factor for chronic obstructive pulmonary disease (COPD) is cigarette smoking. However, only 10–20% of chronic heavy smokers develop systematic COPD. The TGF-β1 is a cytokine with many different effects on cell proliferation, differentiation and inflammation and can protect against the development of COPD. Transforming growth factor β1 (TGF-β1) has a number of actions that make it a candidate for a role in the pathogenesis of COPD. We hypothesized that the inheritance of gene polymorphisms could influence the development of COPD, which was investigated by studying two single nucleotide polymorphisms (SNP) in exon 1 of the TGF-β1 gene.

Methods We enrolled 186 patients with COPD as the research group and 154 healthy people as the control group, all of whom were Indian patients visiting an outpatient facility in New Delhi. The polymorphisms of the TGF-β1 gene, 869T/C and 915G/C, were analyzed polymerase chain reaction-restriction fragment length polymorphism technique on genomic DNA isolated from peripheral lymphocytes. The validity of this technique was confirmed by direct nucleotide sequencing of polymerase chain reaction products. Statistical analysis was done to explore the contribution of TGF-β1 gene polymorphism towards the susceptibility of COPD.

Results The occurrence of the TGF-β1 gene 869T/C polymorphism in patients with COPD was significantly different from the control group (P < 0.05), in which the relative risk of this disease increased in cases who had the C allele (OR: 1.131, 95% CI: 1.101–1.539). There was no increased frequency of TGF-β1 915G/C gene in COPD patients compared with control subjects (P > 0.05).

Conclusion The polymorphism 869T/C in TGF-β1 gene has a significant association with disease occurrence in COPD patients and the C allele might be a risk factor. The homozygous wild-type CC of 869T/C on TGF-β1 could be a predisposing factor in COPD and those who carry the C allele might have particularly susceptibility to developing COPD. Therefore, we hypothesized that genetic variants in or near the TGF β1 gene influence the pathogenesis of COPD among cigarette smokers.

EFFICACY OF TIOTROPIUM IN COPD PATIENTS FROM ASIA: A SUBGROUP ANALYSIS FROM THE UPLIFT TRIAL

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Background Patients from Asia may have different outcomes compared to those from other backgrounds. We therefore examined outcomes in the subgroup of Asian patients in the UPLIFT trial.

Methods Subgroup analysis from UPLIFT (4-year, placebo [PBO]-controlled trial of tiotropium [TIO] in COPD patients). Outcomes: rate of FEV1 decline, changes in FEV1 and FVC, St. George’s Respiratory Questionnaire (SGRQ), exacerbations, mortality.

Results In total, 382 pts (TIO = 184, PBO = 198), age = 66 years, 95% men, postbronch FEV1 = 44% pred. 13% current smokers, SGRQ total score = 44 units. Discontinuations: 38% (TIO); 47% (PBO). Annual FEV1 decline (TIO vs PBO) = 20 vs 18 ml/year (prebronch), 26 vs 31 ml/year (postbronch); p > 0.5. Prebronch FEV1 increased by 63–120 ml (p < 0.01 all timepoints). Mean prebronch FEV1, over time:

SGRQ total score improved by 1.5–6.1 units (p < 0.05 for months 6, 12, 42, and 48). Hazard Ratio (HR) (95% CI) for an exacerbation (TIO/PBO) = 0.81 (0.62, 1.05). Number of exacerbations were reduced with TIO vs PBO (0.68 vs 0.92 per pt-year, rate ratio (95% CI = 0.73 [0.57, 0.94]). Death occurred in 34 (TIO) and 42 (PBO) pts during planned treatment (vital status to day 1440): HR (95% CI) = 0.75 (0.48, 1.18).

Conclusion In COPD patients from Asia, tiotropium improves lung function, improves health-related quality of life and reduces exacerbations over 4 years of treatment, similar to the overall UPLIFT cohort. Funded by Boehringer Ingelheim/Pfizer.
REGULATION OF CIGARETTE SMOKE-INDUCED CHRONIC INFLAMMATION BY PPAR-γ IN ALVEOLAR MACРОPHAGES: EFFECT ON TOLL-LIKE RECEPTOR PATHWAY

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Introduction The peroxisome proliferator-activated receptors-γ (PPARγ), a member of the nuclear hormone receptor superfamily of ligand-activated transcription factor, possesses anti-inflammatory effects. Toll-like receptor (TLR) has been known to mediate inflammatory signaling. This study was designated to determine the effects of PPARγ on chronic inflammatory response to long-term cigarette smoke (CS) exposure and to study the possible relation between PPARγ and TLR.

Methods 1) Thirty male wistar rats were randomly assigned to one of four groups and were given either CS exposure (16 identical cigarettes twice daily for 6 day per week for 12 weeks) or room air, pretreated with PPARγ agonist rosiglitazone, or vehicle (10% dimethylsulfoxide) 30 min before exposure to passive smoke. PPARγ antagonist biphenol A diglycide ether (BADGE) or saline were administered 30 min before rosiglitazone. Lung histological changes were evaluated. The alveolar macrophage (AMs) were isolated from BAL fluid. 2) AMs were gained from normal rats. AMs were stimulated with cigarette smoke extracts (CSE) or saline, pretreated with PPARγ agonist rosiglitazone, or 15d-PGJ2 30 min before CSE. BADGE was administrated 30 min before agonists. The activity of AMs was detected after exposure with smoke in vitro and in vivo. Expression of PPARγ, TLR2 and TLR4 in AMs were assessed by Real-time PCR and Immunohistochemistry. The cytokines LTB4 and IL-8 were measured by ELISA. Western blot analysis for iNOS was performed. Exposure to CS, the expression of PPARγ was reduced, accompanied by an increase of TLR2 and TLR4. Expression showing a linear and significant correlation between PPARγ and TLR4 in AMs. Our study also showed PPARγ agonists could prevent CS-induced chronic inflammation, improve the activity of AMs, induce the production of LTB4 in vivo and in vitro, and delay CS-induced iNOS degradation.

Results Exposure to CS, the expression of PPARγ was reduced, accompanied by an increase of TLR2 and TLR4. Expression showing a linear and significant correlation between PPARγ and TLR4 in AMs. Our study also showed PPARγ agonists could prevent CS-induced chronic inflammation, improve the activity of AMs, induce the production of LTB4 in vivo and in vitro, and delay CS-induced iNOS degradation.

Conclusion These study provides evidence, for first time, that PPARγ is protective against CS-induced inflammation. And PPARγ may play notable roles as modulators of TLR4-dependent inflammatory pathway through NF-kB in AMs.

CHARACTERIZATION OF COPD HETEROGENEITY IN ASIA: INTERIM REPORT BY THE ASIAN NETWORK FOR OBSTRUCTIVE LUNG DISEASE (ANOLD)

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Introduction Chronic obstructive pulmonary disease (COPD) is a leading cause of mortality and morbidity worldwide including Asia. COPD is a heterogeneous disease and may differ in Asia as compared to elsewhere due to various factors. However, there are very few studies about the characterization of COPD heterogeneity in Asia. This ongoing study is conducted to define the characterization of COPD heterogeneity in Asia. This ongoing study is conducted to define the characterization of COPD heterogeneity in Asia.

Methods A total of 539 COPD patients have been recruited so far through the Asian Network for Obstructive Lung Disease (ANOLD), collaborative research network for obstructive lung disease in Asia. Clinical information such as exposure to risk factors, symptom history, information on quality of life based on St George’s Respiratory Questionnaire, along with spirometry was collected for COPD patients who visited speciality clinics/referral hospitals in nine Asian countries, including China, India, Japan, Korea, Malaysia, Philippines, Sri Lanka, Taiwan, and Thailand, from September 1st 2009 to July 29th 2010. More patients will be recruited until August 2010 in Vietnam and Singapore as well as in the above nine countries. This abstract contains an interim analysis.

Results The recruited patients were mostly male (93.6%) and elderly (mean age, 69.3 years). According to GOLD criteria, severity of airflow limitation was mild in 13.2% of patients; moderate in 44.0%; severe in 33.2%; very severe in 9.5%. A total of 92.7% of patients were exposed to cigarette smoking; 56.8% to dusty jobs. A total of 29.3% of patients had symptoms of “chronic bronchitis – phenotype” viz. chronic cough with phlegm; 58.0% had wheezing in the last 12 months. A total of 89.0% of patients were on regular medications, e.g. inhaled steroid combined with long-acting beta-agonist, theophylline, short-acting beta-agonist, tiotropium, combined inhaler of salbutamol and ipratropium, and inhaled steroid alone, in decreasing order. In the past one year, 45.9% patients required/ were prescribed antibiotics for acute exacerbations and 31.1 % required/were prescribed oral steroids. Of this cohort, 26% patients had unscheduled/emergency visits to the ER or were hospitalized.

Conclusion This interim report showed that Asian COPD patients are heterogeneous. A high proportion was exposed to dusty environments at their job sites and many were cigarette smokers. Further studies are ongoing to find out other characteristics of COPD phenotypes including the influence of dusty job environment in the development and progression of COPD in Asia.
### Oral presentation abstracts

**SERUM SURFACTANT PROTEIN D AS A BIOMARKER OF SYSTEMIC INFLAMMATION IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE**

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**Introduction**  It is widely recognized that COPD is not only a lung-based disease, but also a systemic disorder with systemic inflammation, which further aggravates the disease progression at acute exacerbation (AECOPD). It is important to find a systemic biomarker which is lung-specific and can be used to indicate the severity of the disease in the stable state (SCOPD) and at exacerbation. C reactive protein (CRP) and tumor necrosis factor (TNF-α) have been attracted attention as they can reflect the systemic burden of inflammation, while they are not lung-specific. Surfactant protein D (SPD) is produced and secreted by alveolar type II epithelial cells and Clara cells. Recently study has reported that SPD can be used to track disease progression and predict clinical outcomes in COPD. The present study was aimed to determine the value of SPD as a biomarker of systemic inflammation in staging the severity of COPD and diagnosis of the exacerbation.

**Methods**  We recruited three groups of subjects: patients experiencing AECOPD (n = 38), patients with SCOPD (n = 71) and controls with normal lung function (n = 60). ELISA was used to analyze serum SPD, CRP and TNF-α levels. The BODE scoring system was employed to evaluate health status of patients with COPD, which included the following variables: body mass index, degree of airflow obstruction, dyspnea and exercise capacity.

**Results**  Serum SPD levels were significantly higher in patients with SCOPD (190.09 ± 69.05 ng/mL), and much higher in patients with AECOPD (220.03 ± 61.54 ng/mL) compared with controls (98.61 ± 23.89 ng/mL) with p-value of 0.003. Pearson correlation analysis showed that serum SPD levels inversely correlated with FEV1%pred (r = –0.492, p = 0.000) and FEV1/FVC% (r = –0.389, p = 0.001), and positively correlated with BODE scores (r = 0.425, p = 0.000) in patients with SCOPD. In patients with AECOPD, serum SPD levels were positively correlated with CRP levels (r = 0.412, p = 0.010) and TNF-α levels (r = 0.650, p = 0.000), while inversely correlated with FEV1/FVC% (r = –0.347, p = 0.033).

**Conclusion**  The present study confirms that circulating SPD levels are higher in COPD and closely related with health status of the patients and severity of the disease; moreover, circulating SPD can be regarded as a valid biomarker of systemic inflammation and a potential diagnostic biomarker for AECOPD.

### STUDY OF RESPIRATORY MUSCLE STRENGTH, QUALITY OF LIFE AND BODE INDEX IN PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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**Introduction**  The body mass index, airflow obstruction, dyspnea, and exercise capacity (BODE) index was shown at predicting the risk of death, exacerbation and disease severity among patients with chronic obstructive pulmonary disease (COPD). Individuals with COPD present reduced respiratory muscle strength, which leads to impaired mobility and increased mortality risk. However, it is not clear whether there is any relationship between muscle strength, health related quality of life and the body mass index, airflow obstruction, dyspnea, exercise performance (BODE) index scale. The objective of this study was to determine the relationship between health related quality of life (HRQOL), respiratory muscle function and BODE index among COPD patients.

**Methods**  We evaluated pulmonary function, respiratory muscle strength (MIP and MEP) and quality of life questionnaires (St. George’s Respiratory Questionnaire [SGRQ]), as well as determining the body mass index, airflow obstruction, dyspnea, and exercise capacity (BODE) index, in 40 moderate to very severe stable COPD patients.

**Results**  Patients had a forced expiratory volume in the first second percentage predicted (mean ± SD) of 34.73 ± 12.35. There was a negative correlation (Pearson, p < 0.05) of respiratory muscle strength, evaluated by MIP and MEP, to BODE index (–0.33 and –0.46, respectively). There was a positive correlation (Pearson, p < 0.01) of health related quality of life (HRQoL) to BODE index (0.73).

**Conclusion**  Respiratory muscle strength as measured by MIP and MEP is related to the BODE index. Therefore, MIP and MEP have an important contribution in COPD evaluation. BODE index is associated with SGRQ score among stable COPD patients. BODE index might provide useful prognostic information to assess the status of quality of life and to monitor disease progression among stable COPD patients.

### HYPOXIC INHALATION TEST: A LUNG CENTER EXPERIENCE – A PILOT STUDY IN ASSESSING FITNESS TO FLY AMONG FILIPINO PATIENTS WITH CHRONIC OBSTRUCTIVE PULMONARY DISEASE

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**Introduction**  As commercial flights are not pressurized to sea level, a reduction in partial pressures of oxygen may result in a significant hypoxia in other-wise asymptomatic patient diagnosed with chronic lung disease. To identify persons who are at risk of developing respiratory distress during air travel, hence this study was carried out.

**Methods**  A study was done at Lung Center of the Philippines at Respiratory Laboratory Unit, from December 1, 2009 to June 30, 2010 with written informed consent from each participant. Oxygen saturation (SaO2) was recorded every 30 s for the whole study period.

**Results**  Serum SPD levels were significantly higher in patients with SCOPD (190.09 ± 69.05 ng/mL), and much higher in patients with AECOPD (220.03 ± 61.54 ng/mL) compared with controls (98.61 ± 23.89 ng/mL) with p-value of 0.003. Pearson correlation analysis showed that serum SPD levels inversely correlated with FEV1%pred (r = –0.492, p = 0.000) and FEV1/FVC% (r = –0.389, p = 0.001), and positively correlated with BODE scores (r = 0.425, p = 0.000) in patients with SCOPD. In patients with AECOPD, serum SPD levels were positively correlated with CRP levels (r = 0.412, p = 0.010) and TNF-α levels (r = 0.650, p = 0.000), while inversely correlated with FEV1/FVC% (r = –0.347, p = 0.033).

**Conclusion**  The present study confirms that circulating SPD levels are higher in COPD and closely related with health status of the patients and severity of the disease, moreover, circulating SPD can be regarded as a valid biomarker of systemic inflammation and a potential diagnostic biomarker for AECOPD.

### END OF LIFE CARE IN END-STAGE COPD: A DISCUSSION WITH PULMONARY FELLOWS-IN-TRAINING OF THE PHILIPPINES

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**Introduction**  Patients with chronic obstructive pulmonary disease are often ill for many years with occasional acute and severe exacerbations. While gradual deteriorations in health and functional status are not unusual, exacerbations may lead to death. The timing of death in patients with chronic obstructive pulmonary disease remains uncertain. The purpose of this survey report is to be able to determine how the trainees respond when it comes to a terminal disease that is non-malignant.

**Methods**  A conference for pulmonary fellows-in-training was held in our institution last January 28, 2010, regarding end of life care in patients with non-malignant disease. Keypads were distributed to the attendees at the start of the conference. During the forum, questions were projected on the screen. The respondents were given ample amount of time (30 seconds) to key in their answer. The results and percentages were shown after each question.

**Results**  There were 51 attendees during the conference, however there were only 25 keypads available during the conference which were distributed to the delegates from the nine other training institutions. The results showed that all respondents identified the patient to have end-stage lung disease, however only a minority (8%) of them would give palliative care in this patient. Majority (72%) of the respondents would suggest creation of advanced directives at the time the patient is diagnosed to have end-stage lung disease. However, when asked “Would it be easier for you to discuss DNR if the patient had cancer rather than COPD?” majority (72%) answered yes.

**Conclusion**  In our setting palliative care is synonymous with end-of-life care, thus, it is underutilized in patients with non-malignant end-stage lung diseases. Moreover, the trainees appear to be more comfortable in discussing advanced directives or DNR status in patients with end-stage malignant disease rather than in patients with non-malignant end-stage lung disease.
BURDEN OF OBSTRUCTIVE LUNG DISEASE (BOLD) STUDY IN A RURAL COMMUNITY IN THE PHILIPPINES

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Objective To measure the prevalence of chronic obstructive pulmonary disease (COPD) and its risk factors in a rural community in the Philippines.

Design Using the protocol and study design of the Burden of Obstructive Lung Disease (BOLD) Initiative, adults aged ≥40 years were selected by multi-stage sampling procedures. Study participants completed the BOLD study questionnaires which contained information about respiratory symptoms and exposure to risk factors for COPD such as smoking, occupation and biomass exposure. Spirometry was performed before and after administration of bronchodilator using standardized methods. Data was processed by the BOLD Coordinating Center which provided estimated prevalence of smoking and COPD in the study site. Logistic regression analysis was also done to determine factors associated with COPD.

Results A total of 1188 individuals were selected for recruitment, 991 provided full data on the Core Questionnaire, and 722 provided acceptable post-bronchodilator spirometry. The prevalence of ever smoking was 53.2% and the prevalence of COPD (GOLD Stage 1 or higher) was 20.8%. The COPD prevalence was significantly higher among males, and showed an increasing trend from 40 to 70+ years. Among non-smokers, COPD prevalence was 13.4%. Only 1.9% of the participants had a previous diagnosis of COPD. Logistic regression analysis showed that farming > 40 years (OR 2.48; 95% CI: 1.43, 4.30); smoking > 20 pack-years (OR 2.86; 95% CI: 1.78, 4.60); use of firewood as fuel > 60 years (OR 3.48; 95% CI: 1.57, 7.71), and history of tuberculosis (OR 6.31; 95% CI: 2.87, 15.0) were significantly associated with airflow obstruction.

Conclusion The present study shows that COPD prevalence in a rural community in the Philippines was 20.8%, and was higher among males and increased with age. The presence of fixed airflow obstruction was associated with use of firewood as fuel > 60 years, farming > 40 years, smoking > 20 pack-years and history of TB. These findings indicate that risk factors other than smoking may be responsible for the high rates of COPD seen in this rural community.

ASSOCIATION OF MORTALITY WITH PHARMACOLOGIC VENOUS THROMBOEMBOLISM PROPHYLACTIC PRACTICES IN PATIENTS UNDERGOING ORTHOPEDIC SURGERY IN A TERTIARY HOSPITAL

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Association of mortality with pharmacologic venous thromboembolism prophylactic practices in patients undergoing orthopedic surgery in a tertiary hospital.

Introduction Venous thromboembolism is a clinical syndrome affected by certain risk factors, one of which is orthopedic surgery. It is the objective of this study to determine the incidence of pharmacologic and non-pharmacologic use of VTE prophylaxis and correlate with survival in all patients undergoing orthopedic surgery in a tertiary hospital from 2007 to 2008.

Methods A review of records of all patients seen for orthopedic surgery in University of Santo Tomas Hospital from January 1, 2007 up to December 31, 2008, were included in the study. The patient characteristics, type of orthopedic surgery, pharmacologic and non-pharmacologic use of antithrombotic prophylaxis were noted. The primary outcome of in-hospital mortality as well as secondary outcomes of length of hospital stay and morbidities were recorded. Association of giving pharmacologic prophylaxis and survival was done using Spearman correlation.

Results A total of 79 patients were included in the study. Majority underwent partial hip replacement (n = 36/79). Subcutaneous heparin was used in 17/38 patients in 2007, while only 9/41 were given prophylaxis in 2008. In-hospital consultation to a rehab med specialist was made in 32/38 patients in 2007 while 28/41 in 2008. Anti-embolic stockings was used in 4/38 patients in 2007 (10.5%); of whom, 4/38 had contraindication for LMWH. In 2008, out of the 3/41 who were given mechanical prophylaxis, 6 actually had contraindication. Mean length of hospital stay was 14.8 days in 2007 while 11 days in 2008. All-cause in hospital mortality was 2/38 in year 2007; 0/41 in 2008. Anti-embolism stockings was used in 4/38 patients in 2007 (10.5%); of whom, 4/38 had contraindication for LMWH. In 2008, out of the 3/41 who were given mechanical prophylaxis, 6 actually had contraindication. All-cause in hospital mortality was 2/38 in year 2007; 0/41 in 2008. A significant association of giving LMWH with those who were discharged alive was seen (approximation significant = 0.041).

Conclusion There was underutilization of pharmacologic antithrombotic prophylaxis in patients for orthopedic surgery in our institution. Utilization of LMWH was associated with survival. Clinical Implication: a change in paradigm of bleeding risk versus VTE risk and mortality risk should be considered in these orthopedic patients for surgery.

INCIDENCE, MANAGEMENT AND OUTCOME OF EXTUBATION FAILURE IN A TERTIARY HOSPITAL: A PROSPECTIVE OBSERVATIONAL STUDY

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Introduction The incidence of extubation failure is quoted as 2–25% in the literature. Our purpose was to determine the incidence, management and outcome of extubation failure in a tertiary hospital.

Methods A prospective observational study was performed using data gathered in a 8-bedded Multidisciplinary intensive care unit (MICU) in a tertiary hospital. During 12 months, 323 patients were enrolled in our study who received invasive ventilation through an oral endotracheal tube. Extubation failure was defined as reintubation for any reason within 24–72 hours of extubation.

Results Of 167 extubated patients, 22 required reintubation (13.1%). Of these, seven patients expired and one discharged against medical advice (mortality rate 33.3%). Of these, ten patients received non-invasive ventilation (failed extubation), out of which only one improved from NIV alone. The other twelve patients were reintubated directly. Extubation failure was mainly due to respiratory causes (15 out of 21 patients). The average age between survivors and non-survivors did not achieve statistical significance but seems clinically significant. Patients who did not survive failed extubation were significantly sicker on admission as compared to those who survived (APACHE II score 12.78(2.96) and 19(4.89) (P-value 0.0017). The total duration of mechanical ventilation and length of ICU stay did not differ between two groups. The mean (SD) time to reintubation was 21.66 (19.28) hours in the group that survived whereas it was 16 (10.5) hours in the group that did not survive.

Conclusion Extubation failure is associated with high mortality in older and sicker patients, most commonly because of respiratory causes. In our study, Noninvasive positive pressure ventilation was not useful for patients who fail extubation.
QUALITY OF CARE OF SEPTIC PATIENTS IN THE INITIAL 48 HOURS OF MANAGEMENT AND ITS OUTCOME IN PHILIPPINE GENERAL HOSPITAL

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Introduction The burden of infection has prompted considerable effort to improve the outcomes of patients with sepsis. Sepsis is a common presentation in the emergency department. Furthermore, this increasingly prevalent condition has an associated mortality rate of 28–50% at 28 days. Difficulties remain in applying all of the procedures recommended by experts especially in a country like the Philippines, where economics is the main confounding factor in most patients.

Methods This study used a prospective descriptive study. A questionnaire-based survey accomplished by the investigators along with active case review in the emergency department to all medical and surgical admissions who fulfilled the diagnosis of sepsis in 48 hours.

Results There was a mortality rate of seventeen percent for patients admitted with sepsis within 48 hours. Results of our study showed a great improvement in the survival outcomes of our septic patients.

Conclusion Not all parameters of the Surviving sepsis campaign guidelines in the management of sepsis were adhered to in our local setting. The most common site of infection is pulmonary. The most commonly used antibiotic is cephalosporin and macrolides or in combination. There is disparity between the existing guidelines and the parameters used in our setting. The mortality rate in 48 hours is twenty percent.

A PROSPECTIVE STUDY ON THE INCIDENCE AND RISK FACTORS OF LOWER EXTREMIT Y DEEP VEIN THROMBOSIS AMONG FILIPINO PATIENTS ADMITTED IN THE INTENSIVE CARE UNIT

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Introduction Deep vein thrombosis (DVT) is a common cause of morbidity and mortality in the intensive care unit (ICU). Researches on DVT in the ICU have mostly come from caucasian population. Several studies indicate that the incidence of DVT is higher in Asian populations. Several studies have been done in the Philippines but only 94 fulfilled the inclusion criteria. Of the 94, twelve were excluded due to death (n = 4) and transfer out of the ICU (n = 8) before LE Duplex scan could be done. Of the 82 remaining patients included in the analysis, 20.7% (n = 17) tested positive for DVT. Univariate analysis identified only the presence of cancer (53% vs. 12%, difference of 41%, p = 0.001) previous DVT (0% vs 5.88%, p = 0.049) and the use of mechanical ventilator (88% vs 49%, difference of 39%, p = 0.004) as the only significant predictors of DVT. Multivariate analysis identified the presence of cancer (OR 19.7; p = 0.001), the use of mechanical ventilator (OR 12.08; p = 0.019), and high BMI (OR 1.27; p = 0.008) to be predictive of the development of DVT.

Conclusion The incidence of DVT in Filipino patients in our ICU is 20.7%. Patients with cancer, a high BMI and who are on a mechanical ventilator were found to be significantly at risk for DVT, and most likely will need routine prophylaxis. A larger prospective multicenter trial is recommended to validate these findings.

NONINVASIVE POSITIVE-PRESSURE VENTILATION TO PREVENT POSTEXTUBATION RESPIRATORY FAILURE: A META-ANALYSIS

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Introduction The use of noninvasive positive pressure ventilation (NIPPV) has expanded dramatically and it can prevent reintubation after planned extubation. Extubation failure and the need for reintubation within 24–72 hours of extubation occurs in 25% of critically ill patients.

Methods Literature search using MEDLINE, COCHRANE, and OVID databases from January 1980 to May 2010 was done. All meta-analysis and randomized controlled trials using NIPPV in the prevention of postextubation respiratory failure and re-intubation were retrieved. Methodological quality was assessed and data were extracted independently by two reviewers. Data were analyzed using Review Manager 5.

Results Three trials were included in the study. NIPPV decreased re-intubation rate to 52% (RR 0.48; 95% CI 0.29–0.80); ICU mortality rate to 67% (RR 0.33; 95% CI 0.15–0.70) but not hospital mortality (RR 0.65; 95% CI 0.41–1.03). NIPPV also did not decrease the length of ICU and hospital stay.

Conclusion The results of this meta-analysis suggest a decrease in the re-intubation rate in patients given NIPPV after extubation who are at risk of developing post-extubation respiratory failure.

EFFECTS OF TIDAL VOLUME AND PEEP ON ARTERIAL BLOOD GAS AND PULMONARY MECHANICS DURING ONE LUNG VENTILATION

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Introduction A main problem of one lung ventilation (OLV) is hypoxemia. There have been debated the use of high tidal volume might prevent hypoxemia during OLV. We compared the effects of high tidal volume versus low tidal volume with or without PEEP on arterial oxygen tension (PaO2) and lung mechanics during OLV.

Methods A total of 60 patients (16–65 years, ASA I, II) who underwent wedge resection with video assisted thoracostomy during OLV were assigned to three groups; Group I received high tidal volume (10 ml/kg) (n = 20). Group II received low tidal volume (6 ml/kg) (n = 20). Group III received low tidal volume (6 ml/kg) with PEEP (5 cmH2O) (n = 20). The patient’s hemodynamics, pulmonary mechanics, and arterial blood gases were measured before (T0) OLV and 5(T1), 15(T2), 30(T3), and 45 minutes (T4) after OLV.

Results Peak airway pressure, plateau airway pressure, and mean airway pressure were the lowest in group II (p < 0.05). Compliance was decreased significantly compared with T0 in all groups but, there were no differences among the groups. PaO2/FiO2 ratio of Group II and III decreased significantly and hypoxemia more frequently occurred in Group II and III than in group I (p < 0.05).

Conclusion During OLV, mechanical ventilation with low tidal volume with or without PEEP increased hypoxemia than in OLV with high tidal volume.
DIAGNOSTIC YIELD OF POSTBRONCHOSCOPIC SPUTUM IN PRIMARY LUNG CANCER AND PULMONARY TUBERCULOSIS

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Introduction Sputum cytology and culture are noninvasive methods to diagnose lung cancer and pulmonary tuberculosis. Specimens obtained by bronchoscopy are considered to have important role in the diagnosis. However, it is not clear whether postbronchoscopic sputum have some additional information.

Methods We reviewed all the records of bronchoscopies in our hospital from February 1, 2007 to January 31, 2010 and identified 288 patients diagnosed subsequently with primary lung cancer whose sputum cytology was negative or not performed prior to bronchoscopy. A total of 26 patients with pulmonary tuberculosis were also identified whose prebronchoscopic sputum acid-fast stains were negative or not performed. We reviewed the result of pathological examination of bronchoscopic specimens and postbronchoscopic sputum for the lung cancer patients and the result of mycobacterial culture of these specimens for the tuberculosis patients.

Results Of the 288 lung cancer patients, postbronchoscopic sputum cytology was performed in 238 patients and gave a positive result in 39 (14.7%) patients, with two postbronchoscopic sputum was the only diagnostic specimen in 4 (1.7%) patients. Meanwhile, postbronchoscopic sputum culture was performed in 20 of the 26 tuberculosis patients and was positive for M. tuberculosis in 10 (50%) patients. Of these 10 patients, the culture of specimens obtained by bronchoscopy was negative in 5 patient of 3 of whom also had a negative result of prebronchoscopic sputum culture.

Conclusion Postbronchoscopic sputum cytology has a limited role for the diagnosis of primary lung cancer and should not be performed in terms of cost effectiveness. But its culture seems to provide additional information for the diagnosis of pulmonary tuberculosis and further studies are needed to determine when to obtain postbronchoscopic sputum specimens.

COMPARISON BETWEEN FIBEROPTIC BRONCHOSCOPY VERSUS MULTI-DETECTOR CT VIRTUAL BRONCHOSCOPY IN THE EVALUATION OF TRACHEOBRONCHIAL ABNORMALITIES

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Introduction In the clinical evaluation of airway disease, fiberoptic bronchoscopy (FOB) is a crucial tool in the diagnosis. However it is invasive, time-consuming and requires sedation. Endobronchial lesions may be seen in both fiberoptic bronchoscopy and MDCT virtual bronchoscopy (VB). The extensive image data acquired with VB permits the simulation of the internal as well as fiberoptic bronchoscopy and MDCT virtual bronchoscopy (VB). The extensive best complements the fiberoptic bronchoscopy in thorough evaluation of the tracheobronchial tree and cannot obviate the need for this invasive approach in the diagnosis of early mucosal changes within the airway.

TRACHEOBRONCHIAL STENTING IN THORACIC SURGICAL PRACTICE

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Introduction Tracheal and bronchial stenosis is an extremely distressing condition and it may be rapidly fatal. Tracheobronchial stenting improves patients' quality of life and may extend survival.

Methods From December 1996 to May 2010, 153 patients (82 males, mean age 67 ± 9 years) had 172 episodes of tracheobronchial stenting. In 140 (91.5%) tumours with malignant tumours 146 procedures were performed for primary lung cancer in 107 (76.5%), for endobronchial metastases – in 23 (16.4%), for oesophageal cancer – in 5 (3.6%), for carcinoid – in 2 (1.4%) and for other malignant tumours – in 3 (2.1%) patients. In 13 (8.5%) patients with benign pathology 26 procedures were performed for tracheomalacia – in 3 (23.1%), for tracheobronchial fistula – in 3 (23.1%), for endobronchial lipoma – in 1 (7.7%) and for other pathology – in 6 (46.1%) patients. There were 94 (54.7%) unilateral, 32 (18.6%) – tracheal, 31 (18.0%) – tracheobronchial and 15 (8.7%) – bilateral bronchial procedures. On 71 (41.3%) occasions procedure was elective, on 95 (55.2%) – urgent and 6 (3.5%) times it was performed as an emergency. Eight patients required stent replacement. Stenting was performed under general anaesthesia using combination of rigid and fiberoptic bronchoscopy and in majority with intraoperative X-ray control. Uncovered and covered self-expanding stents (Boston Scientific) have been mainly used.

Results There was no intra-operative mortality. Eleven (7.8%) patients died in hospital prior to discharge and 6 of them died within 24 hours after procedure. In all these patients urgent or emergency stenting was performed. Tumour debulking and/or cryotherapy were required on 52 occasions after stenting. Hospital stay ranged from 1 to 32 (mean – 4.47, median – 3) days. In benign group there was one hospital death in a patient with TB stricture. In patients with malignant tumours total survival ranged from 1 to 1678 (mean – 138.23, median – 55) days, in elective subgroup – from 6 to 1678 (mean – 180.16, median – 56) and in urgent subgroup – from 1 to 1146 (mean – 103.98, median – 49) days. All patients had significant improvement of distressing symptoms.

Conclusion Tracheobronchial stenting is rapid and effective technique of palliation in patients with malignant or in selected cases of benign tracheobronchial stenosis. It provides better outcome if performed electively. Stent occlusion may be controlled by endobronchial cryotherapy.

ROLE OF BRONCHIAL ARTERY EMBOLIZATION IN ELDERLY PATIENTS AND MULTIPLE COMORBIDITIES WITH MASSIVE HEMOPTYSIS

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Introduction To determine safety and efficacy of BAE in patients with multiple comorbidities admitted with massive hemoptysis.

Methods Twenty patients with massive hemoptysis admitted between January 2004 and December 2007 were retrospectively analyzed. The mean age was 68.158.10 years with follow-up period of 42,815.3 months. The underlying etiology included Active pulmonary tuberculosis = 8, Bilateral Bronchiectasis = 6, Unilateral Bronchiectasis = 4, Aspergilloma = 1 and Bronchial Artery Aneurysm = 1.

Results Of 20 patients 16 (80%) were male. All patients had multiple comorbidities which include Severe COPD (13(65)), 12 (60%) patients each had heart failure, respiratory failure and anaemia,Hypoaalbuminemia = 14(70%), active tuberculosis = 8(40%), PAH = 4(20%), CAD, CRF, CLD in 3 patients and age and age > 65 years was in 18 (80%) patients. All patients underwent CT thorax and FOB and after localizing bleed underwent BAE within 72 h of admission. In 3/20 (15%), BAE could not be done on account of technical reasons. Immediate control of bleeding was achieved in 17/20 patients (85%). In total, 15/17 patients (88.2%) reported no rebleed till 24 months. None developed early rebleed (<1 month) while 217 (11.7%) develop late rebleed (6 months). One managed conservatively and other underwent lobectomy. Only complication of BAE was transient dysphagia in 1/17 (5.8%).

Conclusion BAE is safe and effective in immediate and long term control of massive haemoptysis in elderly patients with multiple comorbidities and should be considered even in such high risk group.
ENDOBRONCHIAL ULTRASOUND-GUIDED TRANSBRONCHIAL NEEDLE ASPIRATION FOR SAMPLING HISTOLOGY SPECIMENS: COMPARISON OF 21-GAUGE VS. 22-GAUGE NEEDLE

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Introduction Histologic specimens obtained by endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) often provide valuable information for diagnosis or management decisions. Besides the conventional 22-gauge needle, a 21-gauge needle is now available for this procedure. The purpose of the present study was to compare the histologic specimen retrieval yields of EBUS-TBNA using 21-gauge and 22-gauge needles for sampling hilar/mediastinal lesions.

Methods Sixty patients with hilar/mediastinal lymphadenopathy or a tumor adjacent to the central airway were enrolled in this study and randomized to undergo EBUS-TBNA using a 21- or 22-gauge needle. Each histologic specimen obtained by EBUS-TBNA on the initial two punctures of each patient (total 120 punctures) was interpreted separately and categorized by an experienced pathologist as follows: I, diagnostic; II, nondiagnostic but adequate (e.g. lymphoid tissue); III, nondiagnostic and inadequate (e.g. clot); and IV, no specimens.

Results Median targeted lesion size in shortest diameter on CT in the group using a 21-gauge needle and a 22-gauge needle was 23.5 mm and 21 mm, respectively. Prevalence of malignancy on primary disease in each group was 77% and 83%, respectively. The specimens obtained by 21-gauge needle were interpreted as I in 35, II in 8, III in 15 and IV in 2. The specimens obtained by 22-gauge needle were judged to be I in 34, II in 13, III in 7 and IV in 6. The sampling yield of adequate histologic specimens (I and II) obtained by the 21- and 22-gauge needle was 72% and 78% (P = 0.4). No complications were associated with the procedures.

Conclusion Histologic specimens can be obtained with a high sampling yield by either of the needles. Our study could not show any difference in sampling yield between the two needles.

SENSITIVITY AND SPECIFICITY OF MYCOBACTERIA TUBERCULOSIS CULTURE USING LIQUID MEDIA ON BRONCHOALVEOLAR LAVAGE FROM NEGATIVE ACID FAST BACILLI PULMONARY TUBERCULOSIS PATIENTS

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Introduction Diagnostic Tuberculosis using Acid fast bacilli (AFB) microscopy and conventional Lowenstein Jensen (LJ) culture remain the cornerstone but the sensitivity of these traditional methods is quite low, especially in the samples containing small number of organism. There is a need for rapid, sensitive and accurate detection of these organisms in clinical specimens to hasten the administration of appropriate antimycobacterial therapy and prevent the spread of infection in the community. Sputum smear-negative pulmonary tuberculosis (SSN-PTB) is a common problem faced by clinicians. Performing fiber optic bronchoscopy (FOB) and subjecting the bronchoalveolar lavage (BAL) material to diagnostic methods of smear and mycobacterial culture appears to be helpful in the diagnosis of SSN-PTB.

Methods Cross sectional study and diagnostic test, data collected from sputum smear-negative pulmonary tuberculosis patients between April 2010 and June 2010. The fiber optic bronchoscopy was performed to get BAL material, examined smear and mycobacterial culture using liquid media (Mycobacteria growth indicator tube (MGIT) 960 automated) and solid media (Lowenstein Jensen/LJ). The MGIT 960 and LJ cultures will compared each other in growing M. tuberculosis and the time for detecting M. tuberculosis earlier.

Results There were 28 patients (12 female, 17 male). The mean of age was 33.57 years old. The positive AFB smear BAL was 6 patients (21.4%), the positive culture by MGIT 960 medium was 19 patients (67.9%), the mean time to detection of M. tuberculosis in smear positive was 11 days for MGIT 960 and in smear negative specimens it was 18.8 days. The positive culture of LJ medium was 12 patients (41.4%), the mean time to detect of M. tuberculosis in smear positive was 30.5 days for LJ and in smear negative specimens it was 35.8 days. The sensitivity of MGIT 960 is 100 % and specificity is 56.3 %.

Conclusion Detection of M tuberculosis using liquid media (MGIT 960) performed on BALF samples in AFB negative pulmonary TB patients yielded high sensitivity with shorter duration compared with conventional Lowenstein Jensen solid media.
VIRTUAL BRONCHOSCOPY-ASSISTED MEDIASTINAL/ HILAR LYMPH NODE ASPIRATION – EXPERIENCE USING AN IMPROVED VERSION OF BF-NAVI

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Introduction  The usefulness of virtual bronchoscopic navigation has been established for the diagnosis of small peripheral lesions. Exclusive software (BF-NAVI) from Olympus Medical Systems is commercially available, but because no function to display extra-airway structures has been installed, this could not be indicated for testing where the purpose is mediastinal/hilar lymph node aspiration. Using an improved version of the software from Olympus Medical Systems to permit lymph node visualization, this study evaluated the aspiration support function.

Methods  Before testing, size and position of lymph nodes for aspiration were established on MPR images of CT data. On the virtual navigation image, these were displayed in a transparent ellipse from the airway. Besides rotation and back and forth movements, changes in angle of the bronchoscope tip are simulated, and a function is also available to move the virtual image field up, down, left, and right. Using these, the navigation image was compared with the real image, and the lymph nodes were aspirated. In 8 patients with enlarged mediastinal/hilar lymph nodes, transbronchial needle aspiration (TBNA) without using an ultrasound probe, or EBUS-TBNA, was selected for aspiration.

Results  Lymph nodes were aspirated under navigation in all patients. The diagnosis was primary lung cancer in five patients, metastatic tumor in one patient, and sarcoidosis in two patients. Depth perception was difficult for the transparently displayed lymph nodes, particularly #2 and #4, and judging anterior-posterior relationships was difficult when nodes were superimposed.

Conclusion  Some room for improvement thus remains in the display method. However, this offers future promise as diagnostic support technology.