PRE-CONGRESS WORKSHOP I

NON-INVASIVE VENTILATION IN ACUTE RESPIRATORY FAILURE

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If we study the pathophysiology of the conditions leading to hypercarbic or hypoxemic acute respiratory failure (ARF) it is clear that these conditions are correctable to measures available within the context of non invasive ventilation (NIV). Both inspiratory assistance and/or positive end-expiratory pressure have physiological rationale for their application. If adequate alveolar ventilation and oxygenation can be safely provided, NIV has the potential of reducing the morbidity, and possibly the mortality, associated with hypercarbic or hypoxemic respiratory failure.

There have been many carefully conducted randomized trials assessing NIV unfortunately methodological limitations affect the interpretation of current evidence. There is no evidence to support the use of particular patient interface devices but clinical experience however suggests that full-face masks improve efficacy by reducing leaks and are more appropriate for use in the setting of severe hypoxemic ARF. To be effectively initiated in all clinical areas, a wide array of interfaces should ideally be available for immediate use. Choice of mode should be based on local expertise and familiarity, tailored to the etiology and severity of the pathophysiological process responsible for ARF. Ventilator settings should be adjusted to provide the lowest inspiratory pressures or volumes needed to produce improved patient comfort (a decrease in respiratory rate and respiratory muscle unloading) and gas exchange. The type of ventilator and level of monitoring should be determined by the severity of illness and location of care.

At present, there are no RCTs comparing NIV initiated and maintained in the ICU with that performed in other venues. We know that NIV can be effectively delivered outside the context of a clinical trial and studies indicate that NIV can be initiated outside the ICU. Most investigators have managed patients in an ICU or equivalent environment. The best venue depends on local factors such as the training and experience of the staff, available resources (beds, staff, equipment), and monitoring capacity. Delivery of NIV does not appear to increase nursing or respiratory therapist workload. NIV can be initiated in the A+E when staff have been adequately trained but most patients receiving NIV should be managed in an ICU or within a system of care capable of providing high-level monitoring, with immediate access to staff skilled in invasive airway management. In selected patients with exacerbations of hypercapnic COPD (pH > 7.30), NIV may be initiated and maintained in the ward when staff training and experience are adequate. When NIV is initiated outside the ICU, failure to improve gas exchange, pH, respiratory rate, or dyspnoea, or deterioration in hemodynamic or mental status, should prompt referral to the ICU service.

Controversy exists concerning the exact indications for NIV in patients with hypoxemic ARF. The addition of NIV to standard medical treatment of patients with ARF may prevent endotracheal intubation (ETI), and reduce the rate of complications and mortality in patients with hypercapnic ARF. Several randomized, controlled studies support the use of NIV as an appropriate treatment in selected patient populations with ARF. One study has demonstrated NIV to be an adequate alternative to conventional ventilatory support but more studies however are required to confirm this finding. Larger, controlled studies are required to determine the potential benefit of adding NIV to standard medical treatment in the avoidance of ETI in hypoxemic ARF. Patients hospitalized for exacerbations of COPD with rapid clinical deterioration should be considered for NIV to prevent further deterioration in gas exchange, respiratory workload, and the need for ETI. There are no NIV studies that directly compare ICU and non-ICU management of patients with hypercapnic respiratory failure. There is also evidence to support the use of NIV in immunocompromised patients with pulmonary infiltrates.

Other indications for NIV use in acute setting such as shortening weaning time and avoiding reintubation represent promising indications for NIV. In postoperative patients, it has the potential to improve many physiological parameters without apparent serious side effects. Whether NIV can also modify relevant clinical outcomes in these patients is less clear and requires further investigation.

PRE-CONGRESS WORKSHOP 1

NON-INVASIVE VENTILATION IN CHILDREN

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Non-invasive ventilation (NIV) refers to the provision of ventilatory support through the patient's upper airway using a mask or similar device. NIV reduces the work of breathing by resting the respiratory musculature, improves alveolar ventilation and gas exchange.

NIV has multiple roles in children and are used in acute respiratory failure, chronic respiratory failure, sleep disordered breathing, weaning of ventilation from invasive ventilation and to augment pulmonary rehabilitation.

Some of the advantages of NIV in children include it's easy, shortened PICU stay, suitable for home care, able to communicate verbally etc. However, there are several contraindications for NIV e.g. respiratory arrest, life-threatening refractory hypoxemia, hemodynamic instability or life-threatening arrhythmia, inability to use mask because of trauma or surgery, excessive secretions etc.

PRE-CONGRESS WORKSHOP 2

SLEEP SCORING IN ADULTS

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An overnight polysomnography (PSG) is the gold standard technique used to diagnose obstructive sleep apnoea (OSA). A six-hour minimum duration of a diagnostic PSG is preferred, which allows for the assessment of variability related to sleep stage and position with respect to obstructive respiratory events and the occurrence of other types of nocturnal events such as limb movements.

Apnnoea is defined as the cessation of airflow for ≥ 10 secs and hypopnoea is defined as a recognizable, transient reduction, but not a complete cessation of, breathing ≥ 10 secs. A ≥ 50% decrease in the amplitude of a validated measure of breathing must be evident, or a <50% amplitude reduction which is associated with either an oxygen desaturation of ≥3% or an arousal. Obstructive apnoeas and hypopnoeas are typically distinguished from central events by the detection of respiratory efforts during the event.

A respiratory effort related arousal (RERA) is an event characterized by increasing respiratory effort for ≥ 10 secs leading to an arousal from sleep, but which does not fulfil the criteria for a hypopnoea or apnoea. A RERA is traditionally detected with nocturnal esophageal catheter pressure measurement, which demonstrates a pattern of progressive negative esophageal pressures (Pes) terminated by a change in pressure to a less negative pressure level associated with an arousal. Novel techniques are available which may allow for increased technical ease in the detection of RERAs.

The respiratory disturbance index (RDI) is defined as the number of obstructive apnoeas, hypopnoeas, and RERAs/hour averaged over the course of at least 2 hrs of sleep as determined by PSG. At present, there is no added clinical value in differentiating apnoeas from hypopnoeas, because apnoeas and hypopnoeas have a similar pathophysiology and both usually end in arousal and often in desaturation.

The respiratory measures from PSG in moderate (AHI ≥ 15 events/hr) or severe OSA patients (AHI ≥ 30 events/hr) are very reproducible on a night-to-night basis. Milder OSA patients may demonstrate variability in the AHI that may result in a false-negative rate as high as 50% using an OSA definition of an AHI ≥ 5 events/hr.

PRE-CONGRESS WORKSHOP 2

INTERPRETATING PSG REPORT IN CHILDREN

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Polysomnography is a gold standard for diagnosing Obstructive Sleep Syndrome in (OSAS) children. However interpretating the sleep study in children are more difficult compare than to adult. Thus the accreditation process in children is more vigorous. There are few issues that need to be understood before one's interpreting the sleep study.

Such issues are:

- Evolving of EEG pattern in children before they attained adult EEG pattern.
- Sleep pattern in children change from infant to adult and only attained adult sleep pattern at around 6 years old.
- Normalitive data in children are not well established.
- Poor correlation between technician score and machine score, and no proper validation in sleep scoring by the machine. Hence for children, proper sleep scoring has to be done manually and thus very time consume.
- In children, the CO_2 level either as $ETCO_2$ or percutaneous is necessary to complete the study as some children will only have CO_2 retention as the value affected and it is also necessary as indicator of severity.
- Some sleep behaviour which considered abnormal in adult can be normal in children such as prominent abnormal breathing in young children consider be normal.
- There were common agreements in interpretation of the significant scores; however there were still no consensus to stratify it in term of severity and the follow-up management.

Thus interpretation of sleep children can be time consuming and tedious. Generally the interpretation can be divided to work of breathing, gas exchange abnormalities, respiration abnormalities (obstructive, central, mix or hypopnea) and sleep abnormalities include arousal index, sleep efficiency. Other parameters that can help in determining the severity are ECG changes and sleep position. From all these parameter the severity of OSAS were determined.

PRE-CONGRESS WORKSHOP 2

BIPAP FOR SLEEP-DISORDERED BREATHING

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The main indication for initiating BiPAP therapy is in the management of patients with Obesity Hypoventilation Syndrome (OHS). OHS exists when there is obesity and alveolar hypoventilation during wakefulness, which cannot be attributed to pulmonary parenchymal or pleural pathology. In the absence of acute decompensation, management of patients with OHS and chronic hypoventilation usually begins with a polysomnogram to detect coexisting OSA.

Patients with OHS alone should be treated with nocturnal BiPAP, because CPAP is unlikely to be effective in the absence of OSA. Patients with OHS plus OSA can be treated with nocturnal CPAP initially, and then switched to BiPAP therapy if they do not tolerate CPAP therapy or have persistent alveolar hypoventilation despite CPAP therapy.

The optimal level of CPAP is determined during sleep study. Starting from 4 cmH2O, the CPAP is increased in increments of 2 cmH2O until obstructive events are abolished. Patients with OHS plus OSA who have persistent alveolar hypoventilation despite elimination of obstructive events, should be converted from CPAP to BiPAP.

Beginning with IPAP and EPAP settings same as the CPAP level at which obstructive events were eliminated, the IPAP is increased in increments of 2 cmH2O until alveolar ventilation is improved.

Blood gas analysis is the gold standard method of assessing alveolar ventilation. After nocturnal BiPAP therapy is initiated, periodic awake arterial blood gases are useful to verify that alveolar hypoventilation has improved. Repeat polysomnogram should be considered in certain situations.

PLENARY I

CURRENT MANAGEMENT STRATEGIES IN COPD

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In recent years, there has been increasing awareness of the global burden of chronic obstructive pulmonary disease (COPD). In response to this awareness an international working party has developed the GOLD guidelines 1 for the management of COPD. These guidelines address diagnosis, severity classification and management. The drug therapies and pulmonary rehabilitation programs reflect the health care resources available in the developed world. Asian Pacific adaptations of these guidelines have been published to take account of the health care systems which exist in this part of the globe2.

The recommendations of these Asian Pacific (AP) Guidelines acknowledge that it may be necessary to make a diagnosis of COPD without the spirometric measure, which is regarded as mandatory in the GOLD Guidelines. The AP Guidelines state that oral bronchodilators may be effective if inhaled formulations are not readily available. Modified programs of pulmonary rehabilitation, which are less resource intensive than this advocated in the GOLD guidelines are proposed as potentially useful. It is anticipated that implementing these AP recommendations will improve the management of COPD.

SYMPOSIUM I A

THE ETIOLOGY AND MANAGEMENT OF ACUTE EXACERBATION OF COPD

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Acute exacerbations of COPD (AECOPD) may be due to factors such as infection, air pollution, withdrawal of medications or change in temperature. A prospective bacteriology study in Hong Kong showed that among the 530 episodes of AECOPD admissions with sputum saved, 13.0, 6.0 and 5.5% had positive growths of *Haemophilus influenzae, Pseudomonas aeruginosa* and *Streptococcus pneumoniae* respectively.[1] Using PCR for virus identification, 22.1% of the episodes of AECOPD yielded positive viral PCR results from the nasopharyngeal aspiriate.[2] The most commonly identified viruses were influenza A (7.3%), coronavirus OC43 (4.6%), rhinovirus (3.1%), influenza B (2.7%), and respiratory syncytial virus (2.3%).

Concerning the effect of air pollutants on AECOPD, significant associations were found between hospital admissions for COPD with SO_2, NO_2, O_3, PM_{10} and $PM_{2.5}$.[3] Relative risks for admission for every 10μ/m^3 increase in SO_2, NO_2, O_3, PM_{10} and $PM_{2.5}$ were 1.007, 1.026, 1.034, 1.024 and 1.031 respectively, at a lag day ranged from lag 0 to cumulative lag 0-5. In a multi-pollutant model, O_3, SO_2 and $PM_{2.5}$ were significantly associated with increased admissions for COPD. SO_2, NO_2, and O_3 had a stronger effect on COPD admissions in the cold season (December to March) than during the warm season.

Management of acute exacerbation of COPD included systemic corticosteroids and antibiotics.[4] Systemic steroid has been shown to be effective in reducing treatment failure and antibiotics therapy can reduce mortality and treatment failure in those who required hospitalization. Controlled oxygen therapy is needed for hypoxic patients. In patients who remain hypoxic or have a falling pH or rising pCO2 despite appropriate oxygen therapy, noninvasive positive-pressure ventilation (NPPV) can reduce the risk of intubation and in-hospital mortality.

SYMPOSIUM I A

VENTILATION ISSUES IN CHRONIC TYPE 2 RESPIRATORY FAILURE

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Chronic obstructive pulmonary disease (COPD) is the commonest cause of chronic type 2 respiratory failure. Worldwide over 52 million people have COPD. It is the fourth leading cause of death in the United States but is expected to be the third by the year 2020. In 1998 COPD alone was responsible for almost 2% of all hospitalizations and a co-factor in 7%.

Patients with COPD may require respiratory support for a variety of reasons ranging from acute exacerbations, to medical illness, to elective surgeries. In all cases, they can present a unique challenge to the personnel who manage their ventilatory support. This lecture will review some of the main concepts regarding mechanical ventilation of patients with COPD with emphasis on specific recommendations supported by recent literature.

Mechanical ventilation of patients with COPD presents a unique set of challenges compared with other patients. Care must be taken to avoid augmenting dynamic hyperinflation and acid/base disturbances resulting from chronic hypercapnic respiratory failure. Modalities such as NIPPV and helium/oxygen gas mixtures are increasingly being recognized for their ability to help prevent invasive ventilation and aid in getting patients off invasive ventilation.

Despite decades of study, most of the principles of safe mechanical ventilation for patients with COPD such as low respiratory rates that maximize expiratory time and careful attention to air-trapping still hold true to this day. Non invasive positive pressure ventilation (NIPPV) appears to be the most important new modality in reducing the mortality, morbidity and incidence of invasive mechanical ventilation. The benefits of NIPPV for acute exacerbations of COPD have been demonstrated by several clinical trials. It should be regarded as part of standard therapy for patients who continue to have respiratory acidosis after standard medical therapy.

SYMPOSIUM I A

ISSUES IN MANAGEMENT OF DIFFICULT ASTHMA

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The Asthma Insights and Reality in Asia-Pacific Study[1] showed that the level of asthma control in the Asia-Pacific region fell markedly short of goals specified in international guidelines for asthma management. Not all patients with uncontrolled asthma have difficult asthma. With addition of pharmacotherapy, patients with uncontrolled asthma have high chance of getting their asthma better controlled. Difficult asthma may be defined as a patient with a confirmed diagnosis of asthma whose symptoms and/or lung function abnormalities are poorly controlled with prescribed treatment which experience suggests would usually be effective. Patients with severe and difficult-to-treat asthma have impaired health status and account for over half of the cost of the disease and majority of its mortality.

Evaluation of patients with difficult asthma includes proper review of the diagnosis. In addition, avoidance and treatment of contributing factors is important and these include rhinosinusitis and nasal polyps; environmental exposures such as tobacco and occupational agents; drugs like beta-blocker and angiotensin converting enzyme inhibitors; gastroesophageal reflux; obesity; adherence with medications; and psychosocial problems. Patients with severe refractory asthma are those who remain difficult to control despite extensive evaluation of the diagnosis and management following an observational period of at least 6 months by specialist. This group of patients, despite being treated by a combination of high-dose inhaled stoerid, long-acting β2 agaonist, leukotriene receptor anatagonist and methylxanthines, are still suffering from considerable morbidity. Most of these groups of patients are on systemic steroid therapy. Steroid sparing agents such as methotrexate, cyclosporine, gold, tacrolimus, etc, have been reported to yield marginal efficacy. Omalizumab, a monoclonal antibody against IgE, has been shown to be effective in some patients with severe asthma, particularly in reducing exacerbations. Recent small-scale studies have shown some encouraging results for newer treatment including anti-tumour necrosis factor, macrolide and bronchial thermoplasty.

SYMPOSIUM I B

COMMUNITY BASED MANAGEMENT OF ASTHMA AND COPD

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Dyspnoea is one of the common reasons of patient encountered in family practice. The most common cause causes of it is airflow obstruction, which is the basic abnormality seen in asthma and chronic obstructive pulmonary disease (COPD). COPD and Asthma are two common conditions that most likely coexist in about 10% of cases of COPD. The etiology and symptomology differ greatly despite this small overlap. It is important to have a correct diagnosis in ensure for optimum management of both diseases.

In Asthma management, there are not many changes in a few years ago. The roles of LABA, ICS and antileukotrienes have been discussed in many studies. Use of fixed combination doses was shown to improve patient compliance.

Unfortunately, more than half of asthmatics continue to be symptomatic, significant proportion of patients to continue to miss school or work, large proportion still visit emergency department or made unscheduled emergency visits to their healthcare facilities for acute asthma in the previous 12 months. Despite the progress in understanding of asthma and improved management protocol, asthma admission rate are also on increasing trend globally.

Cigarette smoking is undoubtedly the major cause of chronic obstructive airways disease although only 10-15% of smokers develop the diseases. Advising patient to stop smoking is the key to management of those smokers with COPD. For those patients at stage 0 (at risk), it is recommended that risk factors be avoided and influenza vaccinations be given. At stage I (mild), short-acting bronchodilators should be added to the risk-factor avoidance/vaccination. Stage II (moderate) calls for the addition of a regular prescription of 1 or more long-acting bronchodilators; at this time rehabilitation should also be added to therapeutic intervention. At stage III (severe), it is recommended that, along with other therapies mentioned, an inhaled corticosteroid also be prescribed if the exacerbations are repeated (this is a treatment that is not FDA approved). At stage IV (very severe), O_2 and surgery should be considered, if all other treatment options have failed.

SYMPOSIUM I B

HOME OXYGEN THERAPY: THE ROLES OF PARAMEDICS

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Supplemental or "extra" oxygen is one of the most widely used therapies for people admitted to the hospital. It is also frequently used for patients with chronic lung disease who lives at home. In all cases oxygen is being administered by inhalation via a nasal prong, masks or a head box. The importance of oxygen therapy for many patients with heart and lung diseases is now universally recognized.

Oxygen was first discovered by Joseph Priestly in 1774. First used therapeutically in 1794. It is usually considered medically necessary for patients with the following conditions:

1. Chronic hypoxia associated with
   - Diffused interstitial lung disease
   - Chronic obstructive lung disease
   - Cystic fibrosis
   - Bronchiectasis
   - Widespread pulmonary neoplasm
   - Pediatric bronchopulmonary dysplasia
   - Primary hypertension
   - Congestive cardiac failure due to chronic cor pulmonale
2. Acute hypoxia associated with
   - Pneumonia
   - Bronchiolitis
   - Exacerbation of chronic obstructive pulmonary disease

Home oxygen therapy is the home administration of oxygen at concentration greater than ambient air with the intention of treating or preventing the symptoms and manifestation of hypoxic or non hypoxic medical conditions that are known to clinically improve with oxygen.

There are 3 primary methods for providing home oxygen:

- Compressed gas
- Oxygen concentrators
- Liquid oxygen

The role of the paramedics is to evaluate all the facts concern before deciding what type of oxygen to use to recommend. Most of all It depends on the patient's prognosis and projected usage as the main deciding factor. It should be provided by the most cost effective means. The cost effectiveness of using a concentrator versus compressed gas depends on local vendor charges, of it's competitive price purchasing versus rental. It also depends on the credibility of the vendor to ensure good after sale service.

SYMPOSIUM I B

PULMONARY REHABILITATION

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Chest clearance is a significant role for physiotherapists in managing patients with respiratory problems. Techniques for augmenting, when necessary, the normal mucociliary and cough clearance mechanisms of the lungs are not new, but, in more recent years, techniques have been developed which are effective, comfortable and can be used independent of an assistant in the majority of adolescents and adults. In combination with an effective cough, physiotherapy ACTs used in the treatment of respiratory problems consists of a number of different modalities including:

- Use of gravity to aid mucus transport-postural drainage (PD).
- External application of forces against the chest wall-percussion, vibrations, shaking, high-frequency chest wall compression (HFCC).
- Breathing techniques-active cycle of breathing techniques (ACBT) and autogenic drainage (AD).
- Devices designed to introduce positive pressure and/or oscillation into the airways-positive expiratory pressure (PEP) masks, flutter, cornet and accapela, intrapulmonary percussive ventilation (IPV).
- Physical activity and prescribed systemic exercise programmes.

The evidence in support of these techniques is variable, and the literature is confusing and conflicting. There may or may not be significant differences among the techniques in the short or long term. Many of the regimens now include the forced expiratory manoeuvre of a "huff" and this has probably increased the effectiveness of airway clearance. The many techniques that can be applied however depend on the choice of modality chosen for a particular patient which depends mainly on the needs of the individual patients, the medical condition of the patients as well as patient compliance on the choice of modality chosen. If objective differences are small, individual preferences and cultural influences may be significant in increasing adherence to treatment and in the selection of an appropriate regimen or regimens for an individual patient.

SYMPOSIUM I C

PAEDIATRIC OBSTRUCTIVE SLEEP APNOEA: ROLE OF SURGERY

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Many features of childhood Obstructive sleep apnoe (OSAS) are different than adult OSAS. The prevalence of pediatric OSAS is estimated to be around 2% with the peak age being between 2 and 5. This coincides with the peak of adenotonsillar hypertrophy (ATH). The majority of children with OSAS referred to otolaryngologists have ATH with mouth breathing.

The concept of functional anatomic airway zones (Burstein, et al) to identify where the lesion is located help focus treatment. Zone I is from nares to velum, Zone II is from lips to hypopharynx, Zone III is from epiglottis to trachea and Zone IV is from subglottis to bronchi

Although the most common obstruction is caused by adenotonsillar hypertrophy in zones I and II, it is important to recognize that more than one lesion may be present, and that they may occur at different levels. Therefore various diagnostic tools such as flexible fiberoptic examination at the clinic setting will provide a dynamic examination of the upper airway and rigid telescopy / bronchoscopy and laryngoscopy under general anesthesia with spontaneous respiration, may be necessary in children where the site of obstruction cannot be determined by physical examination or radiographic studies.

Since ATH is the most common cause of pediatric OSAS, tonsillectomy and adenoidectomy is the most common procedure in the treatment of pediatric OSAS. Most children are cured. However, several important caveats must be appreciated. Firstly, children with milder forms of OSAS may respond to topical and systemic anti-inflammatory and decongestant therapy that can alleviate the obstruction and obviate (or delay) the need for surgery. Secondly, other causes in the form of soft tissue space occupying lesion (either congenital or acquired) and neurologic lesions extending from oronasal cavity till the supraglotis needs to be ruled out. Examples are the macroglossias, pyriform aperture stenosis, choanal atresia, nasal cyst, teratomas and cystic hygromas.These conditions can be addressed either medically or via endoscopic surgery, open surgery or the use of medical device.

Those with Pierre-Robin sequence are predisposed due to their small recessed mandibles. Children with midface hypoplasia as seen in Crouzon and Treacher Collins syndromes and those with complicating craniofacial deformities or neurologic conditions are also at high risk for OSAS.The procedures such as genioglossus advancement and maxillomandibular osteotomies ,craniofacial advancement, glossopexy, mandibular distraction or advancement, or tongue suspension can be considered in some of these patients but decision to proceed with these procedures needs special consideration due to long-term growth effect and need multidisciplinary approach.

Tracheostomy is one of the reliable options for these children with OSAS. It is warranted for severe symptoms and some of these patients require tracheotomy until growth or further surgery alleviates their condition. Tracheostomy also has an important role in patients who cannot tolerate CPAP, whose symptoms are not relieved by CPAP, and those who have problems with aspiration in addition to their symptoms.

A sizable number of children with severe paediatric OSAS (up to 15 to 20%) may still manifest significant paediatric OSAS post-operatively on repeat sleep studies performed weeks after surgery. Therefore, all children require at least clinical follow-up post operatively. Those with severe POSAS should likely have a follow-up sleep study post-operatively to demonstrate that surgery has been effective.

This topic will also display the clinical examples of different causes of paediatric obstructive sleep apnoe and their treatment in the author's clinical setting.

SYMPOSIUM I C

TRACHEOSTOMY CARE IN CHILDREN

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Asclepiades of Persia is credited as the first person to perform tracheostomy. The commonest indication for tracheostomy in children is severe upper airway obstruction. Although it is a useful approach, it is related to several complications either short or long term.

Tracheostomy care in children involves not only the doctor's expertise but also a good nursing care by the nurses and family members. Complications like recurrent infection, blocked tube or tube dislodged can be avoided by training the caregiver properly and adequately.

Monitoring of the stoma regularly by the clinician is required to detect early complications like granuloma or long term complications like speech problems.

SYMPOSIUM I C

MANAGEMENT OF CONGENITAL & ACQUIRED LARYNGEAL OBSTRUCTION

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Laryngeal Obstruction considered as the life threatening condition, influenced directly by the severity of the obstruction. Awareness of the possible causes will prompt early detection and care. Often there was associated comorbid which worsened the obstruction.The advance of endoscopes has facilitates the diagnosis and the surgical interventions with minimal morbidity.

SYMPOSIUM 2A

APPROACH TO THE DIAGNOSIS OF DIFFUSE PARENCHYMAL LUNG DISEASE

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Diffuse parenchymal lung disease (DPLD)/interstitial lung disease (ILD) is a descriptive term applies to a heterogenous group of disorders manifesting with inflammatory and fibrotic changes in the gas exchanging tissue (the parenchyma) of the lung. Diagnosing this disease could be a daunting task and at times even appeared confusing due to overlapping clinical presentations and radiological findings of the various underlying disorders. Furthermore, lung infection and neoplasia may mimic this disease from the outset. The term interstitial often gives rise to misconception that only the lung interstitium is affected by the disease. In actual fact, the airspaces, peripheral airways, and vessels along with their respective epithelial and endothelial linings are frequently affected. In 2002, the ATS/ERS consensus recommended that a new terminology be used – diffuse parenchymal lung disease.

The diagnosis of DPLD is a dynamic process. A diagnosis may need to be revised several times at different stages when more details of the patient's history and investigations are available. The diagnostic process may be divided into 2 stages: the preliminary investigation and further investigation. In preliminary investigation, a thorough medical history, physical examination, chest radiograph, basic lung function test are obtained to determine whether the patient has DPLD or other diseases.

The medical history should take into consideration the patient's age, gender, ethnicity and symptoms of presentation (dyspnoea, cough, hemoptysis, wheezing, chest pain, hoarseness of voice and constitutional symptoms). Most patients have chronic indolent course of illness; however, some may experience acute illness which will point to certain acute illnesses, e.g. infectious disease, acute interstitial pneumonia, hypersensitivity pneumonia, drug-induced pneumonitis, cryptogenic organising pneumonia (COP), or acute eosinophilic pneumonia. Other medical history, e.g. history of connective tissue disease (CTD), transplant, chemotherapy, radiotherapy, trauma, smoking, travelling, drug history, occupation and sexual history may shed some light into the aetiology of the disease.

On physical examination, signs such as finger clubbing (seen in IPF, bronchiectasis, lung cancer but almost never in sarcoidosis) and lung fibrosis ("Velcro" crepitation) should be routinely looked for. Presence of arthritis, sclerodactyly, Raynaud's phenomenon, dry eyes, dry mouth, rashes, mouth ulcer, muscle tenderness and weakness will help to identify possible association with CTD.

Chest radiograph is an indispensable diagnostic tool. Certain characteristics, such as upper lobe involvement (e.g. sarcoidosis, silicosis, ankylosing spondylitis, hypersensitivity pneumonia, tuberculosis and Langerhans cell histiocytosis) could help to narrow down the differential diagnoses.

Lung function tests: Most of the DPLDs showed restrictive ventilatory pattern, with reduced lung volume and reduced diffusing capacity.

Once the patient is considered having idiopathic interstitial pneumonia, further investigation should include the following:

CT scan has better resolution and gives more details (particularly the mediastinal abnormalities) compared to CXR. These findings could help to identify certain disease entities without a lung biopsy. Besides, images in the CT scan could help to identify areas of abnormality suitable for lung biopsy.

Bronchoscopy (bronchoalveolar lavage, transbronchial lung biopsy)

The bronchoalveolar lavage fluid normally contains more than 95% of macrophages. The predominance of certain subgroups of cells in patients with DPLD might be helpful in the differential diagnosis. Transbronchial lung biopsy is often diagnostic in cases of sarcoidosis, lymphangitic carcinomatosis, bronchoalveolar cell carcinoma, eosinophilic pneumonia, pulmonary alveolar proteinosis, and occasionally helpful in COP.

Lung biopsy: apart from the most distinct cases, biopsy of the lung is desirable in many cases. This could be achieved via VATS, thoracotomy.

- Connective tissue disease screening :
  ANA and RF, though non-specific, is a useful screening test. Further tests, e.g. anti-dsDNA, RNP, PM-Scl, anti Jo-1, SSA or SSB test, as well as C3 and C4 should be obtained in the presence of undefined but suggestive symptoms.
- Blood counts and differential counts e.g. to look for eosinophilia in patients with eosinophilic pneumonia.

SYMPOSIUM 2A

ROLE OF HRCT THORAX IN THE DIAGNOSIS OF INTERSTITIAL LUNG DISEASE

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Interstitial lung disease (ILD), also known as diffuse parenchymal lung disease (DPLD), refers to a group of lung diseases (including idiopathic pulmonary fibrosis), affecting the alveolar epithelium, pulmonary capillary endothelium, basement membrane, perivascular and perilymphatic tissues.

HRCT (high resolution computed tomography) is defined as thin-section CT (1-2-mm collimation scans) optimized by using a high spatial resolution (edge enhancing) algorithm. These technical adaptations to conventional chest CT are designed to improve spatial resolution and thereby improve the ability to detect small structures and subtle abnormalities such as thick interlobular septa, cyst walls, small nodules, ground-glass opacity, and bronchiectasis.

The clinical assessment of a patient who has suspected diffuse lung disease can be a difficult and confusing. Similar symptoms and in some cases similar chest radiograph (CXR) findings can result from a variety of acute or chronic lung diseases affecting the lung interstitium, airways or airspaces. In approximately 10% of cases, the CXR are normal. Although this is often the first test performed in cases of suspected lung problems, a CXR is not as effective as a HRCT scan in diagnosing interstitial lung disease.

HRCT has a role in the routine detection and diagnosis of some individual diffuse lung diseases and many previous studies have shown its higher sensitivity and specificity when compared to chest radiograph. The widespread use of HRCT has been stimulated by numerous published series, which have evaluated the accuracy of HRCT in cohorts of patients. However, most of these series have not simulated the integration of HRCT into clinical diagnosis, and this has led to difficulties in achieving the optimal diagnostic use of HRCT in routine practice. Clinicians may face problems in applying HRCT series to diagnosis in individual patients. Some of the flaws in published series are outlined in Table 1 below. The indications for the use of HRCT in patients who have suspected diffuse lung disease are listed in Table 2.

The appropriate use of HRCT requires the careful integration of HRCT findings with baseline clinical information, with a view to histopathologic evaluation in selected cases when the combined clinical/ HRCT diagnosis is insecure. Thus the optimal diagnostic use of HRCT in diffuse / interstitial lung disease depends upon optimal clinical evaluation. The most important conclusion, perhaps, is that the clinician should not expect too much from CT but should apply it with an awareness of its flaws. When clinical and HRCT data are at odds, or when HRCT features are indeterminate, histologic evaluation continues to play an essential role, especially when integrated with other data in the formulation of a final diagnosis.

Table 1: Flaws in HRCT Diagnostic Studies, Resulting in Difficulties in Applying Published Data to Routine Diagnosis in Individual Patients

1. Study Design. Many series consist of comparisons between chest radiography and HRCT, against a diagnostic "gold standard" of lung biopsy. The true "added value" of HRCT, when integrated with pretest clinical diagnostic probabilities (using historical and clinical data) has not been evaluated. Thus, the real utility of HRCT as a dynamic diagnostic tool has not been quantified.
2. Statements of diagnostic accuracy. Many diagnostic series state the sensitivity of HRCT in identifying disorders diagnosed histologically. The specificity of HRCT for individual DPLDs (and thus the positive predictive value of typical HRCT appearances) has been underreported, but this information is often more clinically valuable statements of diagnostic sensitivity.
3. Nature of studied populations. Diagnostic series are largely drawn from referral populations, with an overrepresentation of rare diffuse lung diseases and other selection biases. By contrast, conditions known to mimic diffuse lung disease (heart failure, chronic infection, malignancy) are seldom included in but may cause major diagnostic difficulty in routine practice.
4. The confidence and experience of observers. A highly confident HRCT observation is more likely to be accurate and may have a profound influence on management and the selection of ancillary investigations. This effect quantified incompletely in diagnostic series. Observations in diagnostic series are made by experienced thoracic radiologists, with much greater experience and confidence than generally available in routine practice.

5. Obsolescence. Many diagnostic series are increasingly obsolete because the diagnostic accuracy of HRCT has improved substantially in some disorders, with greater radiologic experience. By contrast, most diagnostic series do not incorporate recent changes in the classification of diffuse lung disease (e.g., the recent definition of nonspecific interstitial pneumonia).
6. Subclinical disease. The difficult clinical issue of interpreting minimally extensive abnormalities disclosed by HRCT, and judging their clinical significance has not been addressed.
7. "Indeterminate" HRCT appearances. The problem of how best to interpret HRCT appearances intermediate between two or more disorders has not been quantified and confronted.

Athol U. Wells (2003). High-Resolution Computed Tomography in the Diagnosis of Diffuse Lung Disease: A Clinical Perspective. Semin Respir Crit Care Med 24(4):347-356 Thieme Medical Publishers.

Table 2: Indications for the use of HRCT in patients who have suspected diffuse lung disease.

Chronic disease
To detect lung disease in patients who have normal or questionable radiographic abnormalities, who have symptoms or pulmonary function findings suggestive of diffuse lung disease.
To make a specific diagnosis, or limit the differential diagnosis, in patients who have abnormal CXR, in whom the clinical and radiographic findings are nonspecific, and further evaluation, is considered appropriate.
To assess disease activity.
As a guide for the need or optimal site and type of lung biopsy.
Acute disease
To detect lung disease in patients who have symptoms of acute lung disease and normal or nondiagnostic CXR, particularly in immunosuppressed patients.
To exclude specific diseases e.g. Pneumocystis carinii pneumonia, based on HRCT findings.
To suggest specific diagnoses or a list of possible diagnoses to determine subsequent evaluation e.g. need to use bronchoscopy.
To evaluate otherwise unexplained hemoptysis.
As a guide for the need or optimal site for lung biopsy.

W. Richard Webb, Nestor L. Muller, David P. Naidich (2001). Clinical Utility of High-Resolution Computed Tomography (Chapter 10) in High-Resolution CT of the Lung, 3rd ed. Lippincott Williams & Wilkins

SYMPOSIUM 2A

DIFFUSE PULMONARY LUNG DISEASES MANAGEMENT AND PROGNOSIS

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Patients with diffuse interstitial lung diseases (DILDs) are challenging to manage. Patients tend to have inaccurate diagnosis, inadequate information, unsatisfactory treatment or significant side effects associated with therapy. A significant proportion will continue to have progressive debilitating symptoms that impair their quality of life. As a consequence, patients with DILD often become discouraged about their illness and may feel dissatisfied with their medical care.

Establishing an accurate diagnosis is vital in the management of DPLDs. Patients may be divided into 2 groups, patients with idiopathic interstitial pneumonias (IIPs) and patients without IIPs, due to the recognition of associated conditions or underlying exposures. The classification of IIPs includes seven clinico-radiologic-pathologic entities including idiopathic pulmonary fibrosis (IPF) and nonspecific interstitial pneumonia (NSIP)

The clinical course of IPF varies and the long term survival is poor as only 20-30% survive 5 years after diagnosis. Patients may remain relatively stable for a period of time whereas others may experience an accelerated phase with rapid clinical decline and subsequent deaths. In the largest study reported in IPF involving 588 patients. Data on the treatment given and lung function response were collected for 4-6 years and patients followed up until 10 years. The study showed that a third of patients responded to corticosteroid or immunosuppressive treatment and those who improved survived longer. Overall the prognosis is poor with the overall survival less than 2.5 years.

The six minute walk test is recommended for serial pulmonary function tests in routine monitoring and the test has emerged as an important addition to prognostic evaluation, with significant oxygen desaturation identifying a subgroup of patients with higher mortality. A significant decline in Forced Vital Capacity and decline in carbon monoxide diffusing capacity was the most adverse prognostic factor in several studies.

Studies have shown that patients with NSIP have a better prognosis than IPF. This improved prognosis has been observed in several studies and appears to correlate with differences in the dominant pathology, whether a cellular or fibrotic pattern of NSIP is present and dominates.

In the current clinical practice, the options in treatment of DPLDs apart from avoidance of offending exposure, remains unchanged based on the concept that suppressing inflammation would prevent progression of fibrosis. Steroids and/or immunosuppressants (eg azathioprine and cyclophosphamide) remain the mainstay of treatment with the probable addition of acetylcycteine in IPF. However, the monitoring of treatment and ancillary supportive care for general symptoms or organ specific complications are overlapping areas that need to be managed in parallel.

SYMPOSIUM 2B

SCREENING OF OCCUPATIONAL LUNG DISEASE IN MALAYSIA

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Screening of occupational lung disease in Malaysia is part of health surveillance activities which are regulated under Occupational Safety and Health Act 1994. Health surveillance means biological and health effects monitoring due to occupational chemical exposure at work that implicates pre-employment examination, medical removal protection, pre-placement medical examination, disability assessment, workplace inspection, diagnoses of occupational lung disease, notification and referral to physician. Health surveillance has therefore both prevention and clinical focuses whereas screening of occupational lung diseases is a clinical focus.

In Malaysia Occupational Health Doctor (OHD) and physician in the hospital both conduct screening of occupational lung diseases. The needs of health surveillance and screening of occupational lung disease among workers by OHD are dependent on employer request, chemical health risk assessment and industrial hygiene report. The system available enables Department of Safety and Health Malaysia (DOSH) to supervise and enforce on the control of chemical exposure and improve in the working environment that prevents further jeopardizing worker's health. It also provides referral cases to physician to the hospitals. Screening and diagnoses of occupational lung diseases in clinical setting has little implications on the medical treatment in most of the lung disease patients.

In Malaysia, occupational lung diseases and other occupational diseases are under reported for many reasons. Problems in diagnoses in terms of determining exposure assessment, screening tools and cost are among other reasons being discussed. Integration of public health approaches into the clinical setting and team approach will contribute to improvement in diagnosis, treatment and prevention of occupational lung disease.

SYMPOSIUM 2B

NUTRITION SUPPORT FOR CHRONIC LUNG DISEASE

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Optimal nutritional status has an important role in developing and maintaining the integrity of the pulmonary system. Malnutrition will adversely affects lung structure and function, respiratory muscle strength and endurance, immune defense mechanism and control of breathing. Patient with CLD are also at risk for weight loss, nutritional depletion (low body weight), and low triceps skin fold measures. There are also at risk for air flow obstructions and diffusing capacity (carbon dioxide retention). Therefore, nutritional assessment needs to be done either for infants or children, as well as for the adults. Components of Nutritional Assessment including anthropometric measurements, biochemical data, clinical/medical history, diet history and environmental are extremely helpful over the course of treatment, if they can be obtained in a consistent, valid, and reliable way. The goals of nutritional support for patients in respiratory failure are to meet basic nutritional requirements, preserve lean body mass, restore respiratory muscle mass and strength, maintain fluid balance, improve resistant to infection, and facilitate weaning from mechanical ventilation by providing energy substrates without exceeding the respiratory system capacity to clear carbon dioxide. Methods to provide nutritional support depend on the underlying disease, whether the patient is critically or chronically ill, and if ventilator support is required. Nutritional requirements such as energy, macro and micronutrients, and diet modifications are important components of care for the patients.

SYMPOSIUM 2B

SUPPORT NETWORK IN MANAGING CHRONIC LUNG DISEASE

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Chronic lung diseases consisted of cases such as bronchopulmonary dysplasia, bronchiectasis and bronchiolitis obliterans. These cases may affect children of various ages. The severity of these cases varies from mild respiratory distress to moderate and severe that may be oxygen to ventilator dependent.

Managing these cases requires a multidisciplinary approach. The team consisted of Paediatric Chest Physician, General Paediatrician, Physiotherapist, Dietitian and Social worker. In addition these children have an underlying primary disease such genetic diseases, surgical and neuromuscular diseases that will involve the relevant speciality. A basic network of Paediatric Chest Physicians is required preferably in every state ideally to deliver the service. If not they are based regional to receive referral from various hospital according to regions. The centres need to be equipped with the basic respiratory services including providing home therapy programme such as home oxygen therapy and ventilation programme. These centres must be able to work together in providing services with easy access and transfer of patients when required.

The home oxygen therapy was started in 1994. The service started because there is a need for it. The team started by acquiring a ventilator through private funding. The patient is appropriately assessed. The decision to send home required an appropriately assessed patient and the amount of oxygen to be given is determined. The team visits the homes to ensure the house is appropriate and make safety recommendations when necessary. This is also applied to the home ventilation programme. The unit has also involved Tenaga Nasional Berhad for their assurance that the electrical supply and wiring safety makes the standard requirement and Bomba to advice us on the fire hazards.

The other important aspect in this network is education to parents which consists of the medical practitioners and nurses. The nurses involved in the respiratory care are trained to educate the patients regarding the care of the disease, treatment as well as the knowledge regarding the equipment and aspects of troubleshooting.

In any care the involvement of other carers such as the primary paediatrician especially when the patient lives away from the regional centre is important. There needs to be an open communication between the regional centre and the referring hospital with regard to the continuous care of the patient. A dedicate physiotherapist, dietitian and social worker play in important role in the care of these patients and they remain an important members of the respiratory team.

Lastly for any service to be successful, adequate funding is vital. The responsibility of the head of service to obtain adequate funding for the speciality and to be distributed according to the service load and activities of the various units.

PLENARY 2

LUNG CANCER: DIAGNOSIS AND STAGING

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In many patients, a presumptive diagnosis of lung cancer can be made with a high degree of confidence based on the patient's age, risk factors, and the radiographic appearance of the tumour. Tissue confirmation of malignancy and of the cell type must be obtained. The next issue is the extent of disease (staging), i.e., whether the hilar and mediastinal lymph nodes are involved and whether intrathoracic or distant metastases are present. For staging, all patients should undergo computed tomography (CT) of the thorax and upper abdomen to include the liver and adrenals. Patients with signs and symptoms of systemic metastases (eg, fatigue, weight loss, poor appetite, neurological signs and symptoms, bone pain) must be verified by imaging tests such as a brain CT or MRI and a bone scan. An exception to this approach is patients with fairly obvious metastases in whom this can be confirmed by a biopsy of a metastatic site or by a skeletal plain radiograph alone. MRI should be performed for tumours of the superior sulcus to define the relationship of the tumour to adjacent neurovascular structures.

PET imaging is most useful for confirmation of the presumed extrathoracic stage in patients with intermediate stages of lung cancer. PET imaging is particularly useful in patients with an atypical presentation, a solitary site of metastasis, or with lesions that are indeterminate on other scans. For example, patients may present with an enlarged adrenal gland, an indeterminate liver lesion, or a second pulmonary nodule. PET scan is an excellent study to either rule out or rule in malignant involvement in these sites provided the lesion is >1 cm in diameter. The role of PET imaging is limited in patients with strong clinical signs of metastatic disease, or in patients with a clinical stage I lung cancer. A positive PET result in the mediastinum should be confirmed by biopsy because the false positive rate is 15 to 20%. It is unclear and controversial whether a mediastinal biopsy is needed in patients with clinical stage II lung cancer who have no PET uptake in the mediastinum. In patients with a peripheral clinical stage I lung cancer, it is reasonable not to order a PET scan for staging because the chances of finding either distant metastases or mediastinal involvement on PET imaging are quite low.

The International Association for the Study of Lung Cancer has proposed changes in the forthcoming (seventh) edition of the tumour, node and metastasis classification for non-small cell lung cancer.

Proof of the diagnosis of small cell lung cancer is generally obtained from whatever site and method is easiest. This may involve sputum analysis, bronchoscopy, needle aspiration of a supraclavicular node or a pleural effusion, or transthoracic needle aspiration of a mediastinal tumour.

SYMPOSIUM 3A

UPDATE IN LUNG CANCER TREATMENT

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Lung cancer is the commonest cause of cancer deaths in some Western countries and is increasing in incidence in developing countries. Despite advances in many other cancers, the survival from lung cancer is still relatively poor, and quality of life remains a major treatment target.

Improvements in imaging and tumour evaluation such as CT scans and fusion CT-PETs are improving our ability to stage cancers. Updates to the TNM classification is likely to be facilitated through a worldwide lung cancer staging project undertaken by the International Association for the Study of Lung Cancer. Accurate and timely diagnosis and staging are the foundations for subsequent treatment. This has been added by the advent of technology such as endobronchial ultrasound (EBUS) and endoscopic ultrasound (EUS) for assessing cancers and thoracic lymphadenopathy. For early diagnosis, autofluorescence bronchoscopy and narrow band imaging are available in certain centers.

There have been improvements to surgical techniques, post-operative care and minimally invasive surgery. Newer radiotherapy techniques such as stereotactic surgery and tomotherapy are emerging. In addition, the chemotherapeutic armamentarium has increased dramatically with updates of conventional agents as well targetted agents. Targetted agents are being rapidly developed for individualising patient care, and a most interesting observation is in ethnic differences in underlying genetic mutations such as EGFR (epidermal growth factor receptor) which in turn is associated with different responses to EGFR tyrosine kinase inhibitors. Symptom relief and palliation is also a major issue for lung cancer and newer techniques such as radio-frequency ablation, argon plasma coagulation are being tested.

SYMPOSIUM 3A

SURGERY FOR LUNG CANCER

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Surgery is a local treatment for lung cancer and is used to attempt a cure or alleviate symptoms of lung cancer. Lung cancer that has not spread can potentially be cured with surgery. Surgery has an important role in treatment of both primary and secondary lung cancers. Primary lung cancers are categorized into two main types: non-small cell lung cancer (NSCLC) and small cell lung cancer (SCLC). Surgical resection (usually lobectomy) is considered the treatment of choice for individuals with stage I and II NSCLC and for patients with resectable stage IIIA NSCLC. In early stage NSCLC, surgical resection of cancer improves disease-specific and all-cause mortality compared with no treatment, radiotherapy or chemotherapy. The effectiveness and importance of lymph node dissection in treatment of NSCLC is established. However, the extent of lymphadenectomy is still controversial. Current evidence suggests that lung cancer resection combined with complete mediastinal lymph node dissection is associated with a modest improvement in survival compared with lung cancer resection combined with systematic sampling of mediastinal lymph nodes in patients with stage I to IIIA NSCLC. The type of surgery performed depends on location and size of the lung cancer. Although lobectomy should continue to be regarded as the procedure of choice for NSCLC, certain subsets of patients who have favourable characteristics may be treated appropriately with sublobar resection (segmentectomy and wedge resection) without adversely affecting onclologic outcome as long as adequate assessment of intraoperative nodal status and surgical margin is performed. The use of sublobar resections may be particularly useful for small, peripheral tumours less than 2cm in diameter located within anatomic segmental boundaries, as well as for elderly patients who have impaired cardiopulmonary function. Small cell lung cancer (SCLC) accounts for approximately 15-20% of bronchogenic carcinomas. It is the cancer most commonly associated with various paraneoplastic syndromes. The cancer grows very rapidly and in 80% of people has already spread to other organs at the time of initial diagnosis. Because of the high propensity of SCLC to metastasize early, surgery has a limited role as primary therapy. Surgical resection (lobectomy) and lymph node dissection is indicated for Limited stage SCLC, and postoperative chemotherapy or chemotherapy plus mediastinal irradiation is recommended depending on the operative nodal status. The disease is highly sensitive to chemotherapy and radiation, although cure is difficult to achieve. Metastases limited to the lung (secondary lung cancers) may be resected with the resultant prolonged patient survival compared to unresectable, widely disseminated metastases. Resection of pulmonary metastases (metastasectomy) confers a survival benefit to a select group of patients so long as the primary tumour is controlled, metastases are limited to the lungs, the patient can tolerate the operation from a cardiopulmonary standpoint, and the metastases are completely resected. Isolated pulmonary metastases should therefore not be considered untreatable.

SYMPOSIUM 3A

DEALING WITH COMPLICATIONS OF LUNG CANCER

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Lung cancer presentation is usually symptomatic although with the increasing use of imaging, more cancers are being detected at an asymptomatic stage. The complications of lung cancer can be divided into those as a result of lung cancer, those arising from evaluation of possible or diagnosed lung cancer, and those relating to treatment.

Direct lung cancer complications include those due to direct or indirect effects in the thorax; eg SVC obstruction, recurrent laryngeal nerve palsy compared to paraneoplastic events. Evaluation associated complications include those for example due to screening and staging efforts eg potential of radiation induced disease should CTs prove effective for screening, complications of bronchoscopy, transthoracic needle aspiration or other biopsies. Complications of treatment will include those related to surgery, radiation, chemotherapy, targetted therapy or combinations therapy. The impact from the complication on the patient will depend on their co-morbidities, and severity of the complication.

As newer tests and treatment modalities become widely available, a different spectrum of complications will become increasingly important for clinicians dealing with lung cancer. There is increasing recognition for the multidisciplinary approach to treating lung cancer and its complications.

SYMPOSIUM 3B

UNDERSTANDING THE MULTIDISCIPLINARY APPROACH TO PALLIATIVE CARE IN ADVANCED LUNG CANCER

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In the 2nd National Cancer Registry report, lung cancer was the most frequent cancer reported in Malaysian males and the 7th most frequent cancer reported in Malaysian females. Looking at data from the Penang Cancer Registry from 1999-2003, 90% of cases reported with staging presented in late stages III and IV. Studies show that advanced lung cancer is associated with more symptom distress as compared to other cancers and this emphasizes the importance of good symptom management is such patients. Many physical symptoms such as pain, dyspnoea, cough and haemoptysis are common presenting complaints in patients with lung cancer and hence morbidity from this disease is apparent even before confirmation of the diagnosis in some cases. Paraneoplastic syndromes and neuroendocrine disorders are also not infrequently seen in patients with advanced lung cancer. Co-morbidities such as cardiac disease, chronic airway limitation, peripheral vascular disease and artherosclerosis related conditions are also common due to the common etiological factor of cigarette smoking. Finally all patients with advanced disease reach a common pathway towards the end-of-life and despite advances in newer molecularly targeted therapies and chemotherapies for lung cancer, many patients continue to die from their disease. Hence in order to provide adequate symptom management of advanced cancer patients, it is vital that healthcare providers are made aware and understand the multidisciplinary approach to caring for patients facing a 'JOURNEY" of advanced lung cancer and the therapeutic approach to care at each step along the way.

SYMPOSIUM 3B

SAFE HANDLING OF CYTOTOXIC DRUGS & MANAGEMENT OF CHEMOTHERAPY INDUCED SIDE-EFFECTS (FROM NURSING PERSEPTIVE)

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Many cytotoxic drugs are known to be carcinogenic, teratogenic and mutagenic to humans. There is a potential risk due occupational exposure to cytotoxic drugs of hospital personnel who engaged in preparation, administration and disposal of these agents.

Adopting safety handling practice, implement Occupational Safety and Health Administration (OSHA) guidelines, including used of personal protective equipment, engineering controls, and other new system for safely preparing and administering these agents, can help minimize the risk of exposure to workers involved in drugs therapy. Through, ongoing training in the safety requirements for handling hazard materials is required for all involved personnel.

In recent years, with the advent of modern therapeutic approaches, patients with cancer diagnosis achieve high cure rates. More attention is now focused Chemotherapy-induced side-effects such as hair loss till life threatening infection following chemotherapy administration and the late complications. Nurses have a critical role in all aspects of managing side-effects, including assessing it, teaching/ education, administering pharmacologic interventions, and helping patients cope with symptom distress. Highlighted are specific management strategies that may improve patient quality of life and thereby optimize adherence to therapy, which in turn might improve patient outcomes.

SYMPOSIUM 3B

PAIN MANAGEMENT IN ADVANCED LUNG CANCER

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Pain is a common symptom experienced in patients with advanced lung cancer which may be associated with several well known pain syndromes. Common pain syndromes include somatic pain which is mainly associated with infiltration of disease within the pleural structures, ribs or chest wall which may often be described as pleuritic chest pain. Other more complexed pain syndromes include pan-coast tumours in the apical regions of the lungs which not only cause somatic pain in the upper chest but also may be associated with brachial plexopathy and neuropathic pain. Other common pain syndromes are often due to metastatic disease either to the bones, liver or brain. The approach to pain management in such patients therefore requires a good clinical assessment and a clear understanding of the pathophysiology of pain in the patient before appropriate treatment can be recommended. The WHO analgesic stepladder for the management of cancer pain is still a very useful tool and should remain as a starting point for those learning to treat patients with cancer pain. However management also requires a good understanding of drug pharmacokinetics, interactions and side effects to ensure that proper pain management is delivered. Statistics in Malaysia recently show that less than 20% of all cancer patients experiencing moderate to severe cancer pain receive adequate analgesia. Other data show that there is still a great deal of fear amongst health professionals regarding the use of opioid analgesia for cancer pain management particularly at the end of life. These are issues that must be addressed and rectified in order to ensure that our patients with advanced lung cancer receive proper pain management.

SYMPOSIUM 3C

CHILDHOOD BRONCHIECTASIS: A REVIEW

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Bronchiectasis is the pathological term for dilated, chronically infected bronchi and does not strictly denote a specific disease entity. It has a variety of causes and has traditionally been viewed as a condition that is irreversible, often progressive and associated with significant morbidity and mortality. In the past, patients had relatively advanced disease by the time the diagnosis was established. By using high-resolution computed tomography (HRCT) scanning of the chest, the potential now exists for the much earlier detection and treatment of children with lesser degrees of bronchial dilatation and bronchial wall thickening than was previously possible. In some, HRCT changes have been seen to improve or completely resolve.

Chronic suppurative lung disease and bronchiectasis can be inter-related. Children with these disorders present with chronic cough and productive sputum. Chronic suppurative cough may be associated with the destruction of bronchial wall or bronchiectasis.

A vigorous attempt on the identifying the aetiology of bronchiectasis should be emphasized as it leads to changes in management and prognosis of patients. The mainstay of treatment has been antibiotics therapy and physiotherapy, with surgery an option only for localised disease. Lack of clinical trial data in this area makes specific guidelines difficult, especially in children. Current data and evidence on the epidemiology, aetiology and management of bronchiectasis will be reviewed in this lecture.

SYMPOSIUM 3C

IMAGING IN CHILDREN WITH CHRONIC SUPPURATIVE LUNG DISEASE

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Recurrent pneumonia has been defined as 2 episodes of pneumonia in 1 year or 3 episodes over any time frame. Non-resolving or chronic pneumonia is characterised by persistent symptoms and radiographic abnormalities for more than 4 to 6 weeks. A recurrent or persistent cough that is productive of yellow or green sputum suggests chronic suppurative lung disease and possibly bronchiectasis. The differential diagnoses include: post-infective lung damage (for example post-measles, post-adenovirus pneumonia), tuberculosis, retained foreign body, recurrent aspiration, congenital abnormalities of the respiratory tract, immunodeficiency, ciliary dyskinesia, cystic fibrosis).

The clinical history and physical examination in the assessment of children with chronic suppurative lung disease is very important.

The plain radiograph (CXR) is useful in assessing the severity and distribution of lung disease. Wide-spread changes such as bronchial wall thickening involving several lobes suggest a systemic disease such as cystic fibrosis, ciliary dyskinesia or an immunodeficiency. Focal changes would suggest a congenital abnormality, an inhaled foreign body, or bronchial obstruction from some other cause. All previous radiographs should be reviewed. Every effort should be made to restrict the frequency of chest radiographs and to request for them only when there are clear clinical indications and when the results would alter management. A follow-up radiograph should be requested only when there is a definite clinical indication, for example, a significant deterioration in patient's condition. If a follow-up radiograph is thought to be necessary because of extensive lung changes on the initial radiograph, an interval of 2 weeks should be allowed.

High resolution computed tomography (HRCT) is useful for better characterisation of disease, and to accurately assess severity and extent of disease. It is better than CXR at showing bronchiectasis. CT and magnetic resonance imaging (MRI) are useful for assessing congenital abnormalities such as lung sequestration and cystic adenomatoid malformation. Barium swallow and videofluoroscopic swallow studies are useful for investigating gastroesophageal reflux and swallowing incoordination. Ultrasound is useful in confirming pleural collection and in guiding percutaneous drainage.

SYMPOSIUM 3C

PULMONARY REHABILITATION IN CHRONIC SUPPURATIVE LUNG DISEASE

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Pulm rehabilitation is a variety of interventions used to enhance airway clearance with the goal of improving lung mechanics and gas exchange, and preventing atelectasis and infection. The airway clearance may be impaired in disorders associated with abnormal cough mechanics (eg, muscle weakness), altered mucus rheology (eg, cystic fibrosis), altered mucociliary clearance (eg, primary ciliary dyskinesia), or structural airway defects (eg, bronchiectasis) which can lead to chronic suppurative lung disease.

Chest physiotherapy, including postural drainage, chest wall percussion and vibration, and a forced expiration technique increase airway clearance as assessed by sputum characteristics (ie, volume, weight and viscosity) However, the long term efficacy of these techniques measured as rates of exacerbations, hospitalization, health related quality of life and mortality, compared with unassisted cough alone and the use of other devices (flutter, acapella and cough assisted device) that allow patients to achieve the same benefits without the assistance of a caregiver is unknown. Current evidences on these issues will be discussed.

SYMPOSIUM 4A

UPDATE ON THE TREATMENT OF COMMUNITY-ACQUIRED PNEUMONIA

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Community acquired pneumonia (CAP) is a common illness which is potentially life-threatening especially in older adults and those with co-morbid disease. *Streptococcus pneumoniae* is the most frequently identified pathogen, with the highest incidence of this organism reported in studies that used urinary antigen detection. *Haemophilus influenzae*, atypical pathogens *(Mycoplasma pneumoniae, Chlamydophila pneumoniae* and *Legionella pneumophila)*, and respiratory viruses (influenza A and B, adenovirus, respiratory syncytial virus and parainfluenza virus) are the other commonly identified pathogens of CAP. Gram-negative bacilli *(Enterobacteriaceae* and *Pseudomonas aeruginosa)* are the causes in patients who have had previous antimicrobial treatment or who have underlying lung diseases such as bronchiectasis or chronic obstructive pulmonary disease. Even when carefully sought for in prospective studies, the causative organism remains elusive in about half of the cases. Although not as common as in rural areas, *Burkholderia pseudomallei* should be considered a causative organism in this part of the world, particularly if the patient has diabetes mellitus. In a local study on patients hosipitalised for CAP, *Mycoplasma pneumoniae*, *Legionella pneumophila* and *Chlamydophila pneumoniae* was identified in 9.0%, 5.8% and 4.0% of the cases, respectively.

Clinical practice guidelines categorise CAP patients based on the initial site of treatment (outpatient, general ward, or intensive care unit), the presence of co-morbidity and the presence of modifying factors such as risk for penicillin-resistant *Streptococcus pneumoniae*. Each category group of patients is assigned a list of likely pathogens and recommended antimicrobial therapy that covers both the likely pathogens and resistant strains. The use of severity-of-illness scores such as the CURB-65 score (confusion, elevated blood urea nitrogen, elevated respiratory rate, low systolic or diastolic BP, and age $\geq$ 65 years) and prognostic models such as the pneumonia severity index (PSI) for initial risk assessment of severity is endorsed by many professional societies. In recent years, the proportion of penicillin non-susceptible strains of *Streptococcus pneumoniae* and the level of penicillin resistance have increased in many Asian Pacific countries. Resistance of *Streptococcus pneumoniae* to other β-lactams and macrolide is also prevalent. In fact, in several Asian Pacific countries, the prevalence rates of erythromycin resistance exceed 70%. After controlling for comorbid illness, patients infected with antibiotic-resistant *Streptococcus pneumoniae* have not been found to have increased mortality in most studies. Patients infected by resistant organisms, however, may have more severe disease and suppurative complications as well as a longer length of hospital stay. In spite the widespread emergence of in vitro resistance, current antimicrobial regimens are mostly effective in the treatment of *Streptococcus pneumoniae* CAP.

SYMPOSIUM 4A

RECENT ADVANCES IN MANAGEMENT OF SEVERE SEPSIS

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Sepsis is a clinical syndrome characterized by systemic inflammation due to infection. Even with optimal treatment, mortality associated with severe sepsis and septic shock remains unacceptably high. The Surviving Sepsis Campaign was established in Barcelona in 2003 and the original guideline document was published in 2004.

The aim of the campaign is to achieve a 25 percent reduction in sepsis mortality by 2009. Therefore the Severe Sepsis Care Bundles have been introduced. A "bundle" is a group of interventions related to a disease process that, when executed together, result in better outcomes than when implemented individually. It is recommended that the hospital should implement the Sepsis Resuscitation Bundle within the first 6 hours of presentation and Sepsis management bundle should be completed within 24 hours of presentation for severe sepsis and septic shock.

The guideline was reviewed recently and it has been endorsed by 14 international academic societies. The process of documentation was conducted independently of any industry funding and it is published in Critical Care Medicine and also in Intensive Care Medicine 2008. The major methodological difference between the 2008 guideline and 2004 version was the use of GRADE system to guide assessment of the quality of evidence from high (A) to very low (D) and to determine the strength of recommendations.

Strong specific recommendations address:
- Early goal-directed therapy (EGDT)
- Rapid recognition of sepsis
- Obtaining blood cultures before starting antibiotics
- Starting antibiotics within 1 hour of presentation (in the setting of septic shock)

Antibiotic therapy should be de-escalated based on microbiological data and clinical response and continued for 7-10 days in most cases. Source control is crucial for infectious foci amenable to surgical drainage.

Strong general recommendations include low tidal volume ventilation for acute lung injury/acute respiratory distress syndrome (ALI/ARDS); head-of-bed elevation during mechanical ventilation; conservative fluid management for patients with ALI/ARDS who are not in shock; glycaemic control; daily sedation holidays; and prophylaxis of venous thromboembolism and stress-related upper gastrointestinal haemorrhage. A strong recommendation specific to paediatric sepsis discourages the use of recombinant activated protein C in children.

Comparison of the two sets of guidelines reveals that recommendations regarding glucocorticoid therapy, glycaemic control and activated protein C therapy are not as strong as determined previously owing to the publication of recent trials. By contrast, recommendations that rely more on expert opinion (e.g. the importance of surgical source control) have been strengthened.

SYMPOSIUM 4A

MANAGEMENT OF TB IN HIV PATIENTS

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There are challenges in the management of tuberculosis (TB) in the presence of human immunodeficiency disease (HIV) infection. Although the general recommendations for treatment of TB in HIV-infected patients do not differ significantly from those uninfected, there are several factors to be considered. These include health system issues, difficulties in early diagnosis, concerns over compliance, overlapping adverse effects and drug interactions. Current recommendations are for standard 6- month regimens and extended to 9 months in extrapulmonary disease or delayed response. One of the well known problems is the occurrence of paradoxical reactions after initiation of anti retroviral therapy.

SYMPOSIUM 4B

INFECTION CONTROL MEASURES

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The emergence of life-threatening infections such as severe acute respiratory syndrome (SARS) and re-emerging infectious diseases like plague and tuberculosis have highlighted the need for efficient infection control programmes in all health care settings. An infection control programme that puts together various practices which when used appropriately restricts the spread of infection.

Infection control practices by "WHO" states that:
"Standard precautions" require that health care workers assume that the blood and body substances of all patients are potential sources of infection, regardless of the diagnosis, or presumed infectious status. New additions to the recommendations for Standard Precautions are Respiratory Hygiene/Cough Etiquette and safe injection practices, including the use of a mask when performing certain high-risk, prolonged procedures involving spinal canal punctures (e.g., myelography, epidural anesthesia).

Additional precautions are needed for diseases transmitted by air, droplets and contact. (The terms "standard precautions" and "additional (transmission-based) precautions" have replaced previous terms such as universal blood and body fluid precautions, universal precautions and barrier nursing.

Risk prevention for patients and staff is a concern of everyone in the facility,it is therefore the responsibility of each health care facility to develop an infection control programme or policy, to ensure the well being of both patients and staff.

The important components of the infection control programme are:

- basic measures for infection control, i.e. standard and additional precautions; education and training of health care workers; protection of health care workers, e.g. negative pressure isolation room
- identification of hazards and minimizing risks;

  routine practices essential to infection control such as aseptic techniques, use of single use devices, reprocessing of instruments and cleaning of equipment especially respiratory eqipment, antibiotic usage, management of blood/body fluid exposure, handling and use of blood and blood products;
- effective work practices and procedures, such as environmental management practices including management of hospital/clinical waste, support services (e.g., food, linen), use of therapeutic devices; surveillance; incident monitoring; outbreak investigation; infection control in specific situations; and research.

When all of the infection control measures are adhered to the "Who" guideline it will help in the reduction of cost incurring by the use of antibiotics occurred if the is multi drugs resistance bacillus, a reduction in patient's hospital stay and patient's mortality rate. It will also reduce the risk of infection to hospital staff as required by OSHA.

SYMPOSIUM 4B

DOTS: THE ROLE OF PARAMEDICS IN TB MANAGEMENT

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The forty-fourth World Health Assembly (1991) recognized the growing importance of TB as a public health problem. The persistence of TB has been due chiefly to the neglect of TB control by governments, poorly managed TB control programmes, poverty, population growth and migration, and a significant rise of TB cases in HIV endemic areas. To help address the situation, a new framework for effective TB control was then developed and a global strategy called DOTS was introduced. The five elements of the DOTS strategy, considered essential for global TB control are: political commitment, case detection using sputum microscopy among persons seeking care for prolonged cough, standardized short course chemotherapy under proper case-management conditions including directly observed treatment, regular drug supply, and a standardized recording and reporting system that allows assessment of individual patients as well as overall programme performance. Since the introduction of the DOTS strategy in the early '90s, considerable progress has been made in global tuberculosis control.

MOH has introduced an integrated health system whereby the health programmes is accessible at all level of primary care facilities in MOH. Paramedics at health facilities in primary care level play an important role in implementation of DOTS couples with other related activities in TB control programmes. The efficiency of paramedics may increase the cure rate, prevent the existence of multidrug resistance TB and early recognitions of drug side effects and it management.

SYMPOSIUM 4B

ISOLATION WARDS FOR AIR BORNE DISEASES

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The people of Hong Kong will never forget the February of 2003. While it was recovering from the Asian financial crisis, a devil approached silently and caused 1755 sick with 300 deaths of which 8 were healthcare workers. The WHO named the disease as Severe Acute Respiratory Syndrome (SARS) later on. After reviewing the experience in combating the SARS, the Hospital Authority of Hong Kong has made certain enhancements in the isolation facilities to the hospitals under her management. The augmentations were focused on 3 risk mitigation measures – engineering control; administrative control and personal protective equipment. Before then, there was variation in the design of isolation room/ward between the hospitals of Hong Kong. Each hospital created isolation facilities with setting and ventilation system following different standards. This situation has been rectified as violation from the standard requirements in building of an isolation room was prohibited thereafter. Likewise, infection control guidelines and contingency plan were revised in the corporate level. Operating manual in isolation ward was also endorsed by local hospitals to give a clear guidance to the frontline staff. Regarding the PPE; guidelines was formulated, training programmes were developed, fit test to N95 respirator was also coordinated. Everything seems to be under control after the implementation of the abovementioned remedial actions. However, devil is always in the details. The control measures have to be fine-tuned in real life in order to match with existing clinical need and practice. Moreover, we are going to isolate the disease, not the patient. The psychosocial needs of patient have to be addressed. These should also be reflected in the hardware and software design.