

Our Editor's Choice paper this month, by Lin et al, reports an in-vitro comparison of aerosol delivery using different face masks and flows with a high flow humidification system. A spontaneously breathing lung model was used to simulate a child up to 2 y of age using pediatric breathing patterns. Gas flow entering the mask and breathing pattern influenced aerosol delivery, independent of the mask used. Most important, they found that aerosol delivery through a high flow humidification system by mask could be effective with both infant and pediatric breathing patterns. Many options exist for aerosol medication delivery. As Deakins points out in her editorial, selection of the appropriate device is critical to achieve the optimum drug delivery in a judicious fashion.

Bugis et al determined whether the tracheostomy collar, Wright mask, or aerosol mask attached to a jet nebulizer performs better in facilitating delivery of aerosolized medication to the lungs. The study also compared albuterol delivery with an opened versus a closed fenestration, and determined the effect of I:E ratio on aerosol delivery. In this model, the tracheostomy collar delivered more aerosol to the bronchi than the Wright mask or aerosol mask. The I:E ratio of 2:1 resulted in greater aerosol deposition when compared to 1:2. Closing the fenestration improved aerosol delivery. An important finding of this study is that the method used by many clinicians to administer aerosols by tracheostomy produced the best results. As Blake-man reminds us, sometimes the simplest approach is the best.

The hypothesis of the study by Coffey and colleagues is that a new bag and mask design would be as effective and easy to use as a standard, self-inflating resuscitation bag and mask. The performance and acceptability of the prototype Upright device suggest that it may be suitable for effective ventilation by infrequent users in low-resource settings. Emberger states that this is important because innovative, low cost, easy to use devices may be key to treat neonates with birth asphyxia in locations that do not have enough training or resources to handle neonatal resuscitation.

Galindo-Filho and colleagues compared radio-aerosol pulmonary index and radio-aerosol mass balance in the pulmonary and extrapulmonary compartments of aerosol administered using vibrating mesh nebulizers and conventional jet nebulizers during noninvasive ventilation (NIV). They enrolled 10 normal subjects using a crossover design. The mesh nebulizer delivered more than 2-fold greater radiolabelled drug into the respiratory tract than a conventional jet nebulizer. The authors appropriately recommend additional studies in subjects with airway disease to test the clinical relevance of this study.

The aim of the study by Amirav et al was to develop an accurate and reliable way of measuring dead space volume and to apply this technique by comparing the dead space volume of commonly available face masks. Small and medium size face masks of various brands were scanned and digitized by means of computerized tomography. Each mask was electronically applied to a digital face and the dead space volume measured. The authors found that computerized techniques provide a relatively simple way of accurately measuring dead space volume of face masks.

Faber et al used a noninvasive computerized tool to quantify wheeze before and after nebulization with hypertonic saline in children admitted for respiratory syncytial virus infection. They found that hypertonic saline nebulization does not improve airflow, assessed by either clinical or computerized acoustic scores, in children admitted for respiratory syncytial virus.

Stehling and colleagues investigated whether lung volume reduction in Duchenne muscular dystrophy (DMD) is associated with ventilation inhomogeneity measured with the multiple-breath washout technique. Moderate to severe lung volume reduction in subjects with DMD was associated with ventilation inhomogeneity. Lung clearance index elevation may be the re-

sult of altered ventilation geometry or retention of airway secretions in the infection-free patient with DMD.

Jácome and Marques assessed the variability and reliability of computerized respiratory sounds at distinct airflows and standardized anatomic locations in subjects with COPD. They found that parameters of computerized respiratory sounds are more reliable at an airflow of 0.4–0.6 L/s and with an overall reliability at all anatomic locations.

The objective of the paper by Delgado and colleagues was to evaluate the profile of subjects with COPD living in São Paulo, Brazil, who search the Internet for information about COPD. They found that only about 14% of the subjects use the Internet for information about their disease. Use of the Internet is associated with having a computer, low dyspnea score, and high socioeconomic level.

Whether arm bracing affects dyspnea, expiratory flow limitation, and lung volume in elderly subjects with COPD was investigated by Ogino et al. Expiratory flow limitation and Borg dyspnea scores were significantly lower with arm bracing than with the other postures in subjects with COPD. The decreased expiratory flow limitation in the arm bracing position may be caused by breathing at a higher lung volume in the erect position, which may be one of the factors relieving dyspnea in elderly COPD subjects.

Montserrat-Capdevila et al determined predictive factors of hospital admission for exacerbation during primary care visits in subjects with COPD. Predictive values for hospital admission were age, gender, previous exacerbations, number of visits to the primary care center, comorbidities, smoking, disease severity, and influenza immunization. The authors concluded that this model might identify patients at high risk of hospital admission for COPD exacerbation. Further studies are needed to validate the model in different populations and settings.

The aim of the study by Boccia and colleagues was to determine whether electromyographic manifestations of fatigue and exercise tolerance were related to stage disease in subjects with COPD. They found that electromyographic manifestations of fatigue during sustained quadriceps contraction significantly correlated with disease severity and exercise tolerance in subjects with moderate to severe COPD.

The objectives of the study by Williams et al were to develop and implement a cognitive behavior therapy program specific to the perceptual experience of breathlessness, identify any practical issues in the study protocol, and estimate any beneficial effect of combining the cognitive behavior therapy program with comprehensive pulmonary rehabilitation. They found that the cognitive behavior therapy program for the perceptual experience of breathlessness was feasible and well accepted by participants. However, the protocol raised a number of methodological limitations warranting modification. A larger randomized controlled trial is needed to determine its effectiveness and long-term outcomes.

Horne et al developed pulmonary-specific risk scores for all-cause mortality prediction using spirometry, red cell distribution width, and other laboratory parameters. Pulmonary-specific Intermountain Risk Score and pulmonary-specific Basic Metabolic Profile Risk Score provided excellent discrimination of mortality among pulmonary subjects. These risk stratification tools combine familiar, relatively inexpensive, commonly measured, standardized laboratory parameters with spirometry data. They can be electronically calculated at the point of care, providing meaningful risk information to assist clinicians in patient evaluations.

The aim of the study by Alainnejad and colleagues was to assess the efficacy of NIV in subjects with severe mustard airway disease. They found that NIV could be used as an effective palliative treatment of mustard airway disorders.