Impact of relative contraindications to home management in emergency department patients with low-risk pulmonary embolism

**Authors:** Vinson DR, Drenten CE, Huang J, et al.  *Annals ATS* 2015; DOI:10.1513/AnnalsATS.201411-548OC

**Summary:** The pulmonary embolism (PE) severity index (VPI) staging is fundamental for the management of lung cancer patients. Visceral pleural invasion (VPI) is an independent prognostic factor for early stage lung cancer and these findings support the incorporation of the VPI into the staging system for tumors 3–7 cm. This improved classification could lead to better treatment for patients. Reviewed by: Eleftheria Chaini (Greece, Assembly 11)

Incidence of viral infection detected by PCR and real-time PCR in childhood community acquired pneumonia: a meta-analysis

**Authors:** Wang M, Cai F, Wu X, et al.  *Respirology* 2015; 20: 405–412

**Summary:** Wang et al. have conducted a meta-analysis of 21 reports on the incidence of viral childhood community acquired pneumonia (CAP) infection. Studies reporting the incidence of viral infection were analysed, and pooled incidences were calculated with a random-effects model. Subgroup and univariate metaregression analyses were used in exploration of heterogeneity.
The analysis of 21 eligible reports found that respiratory viruses could be detected in 37.4% (95% CI 50.8–64.1) of paediatric patients with CAP. Of these viral infections, more than half were categorised as mixed infection, with the pooled incidence of 29.3% (95% CI 22.4–36.2). However, it should be highlighted that, first, only 11 out of 21 studies provided raw data to estimate the incidence of mixed infections. Secondly, the heterogeneity was considerable among the pooled incidence estimates of mixed infections. The viruses most frequently detected in childhood CAP were rhinovirus, respiratory syncytial virus and bocavirus. Respiratory viruses were detected at different rates in different patient age groups: 76.1% in those aged ≥2 years, 63.1% in those aged 2–5 years and 27.9% in those aged <2 years.

In conclusion, respiratory viruses were commonly detected by PCR/real-time PCR in paediatric CAP patients with over half also having a concurrent bacterial infection. Reviewed by: Rebecca Huang and Fiona Claxton (UK, Assembly 7)

Semiquantification of pneumothorax volume by lung ultrasound
Authors: Volpicelli G, Boero E, Sverzellati N, et al.
Intensive Care Med 2014; 40: 1460–1467
Summary: The clinical utility, reliability and high sensitivity of bedside lung ultrasound (LUS) in the diagnosis of pneumothorax has been widely demonstrated. Despite this, no study has evaluated the possibility of using LUS to estimate pneumothorax volume. Volpicelli et al. conducted a prospective, single-blind study to 1) explore the ability of LUS to grade pneumothorax volumes quantified by computed tomography (CT), and 2) to investigate the accuracy of LUS compared with chest radiography (CXR) reading in differentiating small from large pneumothorax. In 124 patients with a diagnosis of pneumothorax of any cause, based on CXR/CT, LUS was performed. The lung point (LP), the projection on the chest wall of the point where visceral and parietal pleura re-adhere and lung sliding reappears, was obtained through LUS and used in subsequent analyses for the quantification of the pneumothorax volume. The LP was proven to be a useful predictor of pneumothorax volume measured by CT. In fact, the lateral progression of the LP corresponded to a progressive increase in pneumothorax volume evaluated with CT. In particular an LP anterior to the mid-axillary line was shown to correspond to a lung collapse of 10%, while a LP posterior to the mid-axillary line corresponded to a lung collapse up to 30%. Furthermore, when compared with guidelines criteria based on CXR reading, the LP appeared more accurate and reliable in classifying pneumothorax size. In particular, the mid-axillary line, which coincided with a 15% lung collapse, represented the most accurate anatomic boundary between large and small pneumothorax. Therefore, an LP located up to this line could suggest a conservative treatment of pneumothorax. For the first time, a study has definitively demonstrated in humans that LUS may be used to reliably grade the size of a pneumothorax. These findings appear to be extraordinarily relevant and could lead to a revolution in the practical management and decision-making process of pneumothorax, considering that LUS is a safe, real-time and radiation-free technique. Reviewed by: Annia Schreiber (Italy, Assembly 2)

Involvement of urokinase in cigarette smoke extract-induced epithelial–mesenchymal transition in human small airway epithelial cells
Authors: Wang Q, Wang Y, Zhang Y, et al.
Lab Invest 2015; 95: 469–479.
Summary: Epithelial mesenchymal transition (EMT) is the biological process in which epithelial cells change to a mesenchymal phenotype. EMT is vital during embryogenesis (type-I EMT), but can also be induced as a result of persistent tissue damage. There are then two subsequent possibilities: fibrosis (type-II EMT) and pre-malignant stroma when associated with angiogenesis (type-III EMT). In chronic obstructive pulmonary disease (COPD), EMT may contribute to small airway (SA) fibrosis (type-II EMT) and to cancer (type-III EMT). In this study, the authors investigated the role of urokinase-type plasminogen activator (uPA) in inducing EMT in SAs of COPD patients. They seek evidence for EMT in lung tissue and epithelial cell lines. The data suggest that uPA is highly expressed in the SAs of smokers/COPD patients and is related to vimentin expression. Moreover, inhibition of uPA blocked EMT and reduced migration of cells. The authors suggest that uPA may contribute to SA fibrosis through EMT. However, the authors did not compare large airways (LAs), which are the major site for epithelial malignancies in EMT, to COPD and the contribution of uPA expression. This warrants further studies, since uPA may be driving type-II EMT in SAs, contributing to fibrosis at this site, whereas type-III in LAs might be contributing to epithelial malignancies. This study confirms the importance of EMT in smokers and in COPD and the contribution of uPA in driving EMT-related changes. It also suggests uPA as a potential therapeutic target. Understanding the role of EMT in COPD will lead to better understanding of pathogenesis of COPD and its relation to fibrosis and cancer and may have therapeutic implications. Reviewed by: Sukhwinder Singh Sohal (Australia, Assembly 3)

Hot topics are short (approx. 200 words) summaries of recent important articles in respiratory medicine written by Junior ERS members (aged 35 years and under). To become a hot topic author please contact Neil Saad: e-mail: neil.saad11@imperial.ac.uk