

MONDAY, SEPTEMBER 3RD 2012

---

## 264. Respiratory infections: prognosis and outcome

---

**P2473****Prediction of prognosis in healthcare-associated pneumonia**

Isao Ito<sup>1</sup>, Tadashi Ishida<sup>2</sup>, Hiromasa Tachibana<sup>2</sup>, Hiromi Tomioka<sup>3</sup>, Seizo Kadowaki<sup>4</sup>, Naoya Tanabe<sup>1</sup>, Michiaki Mishima<sup>1</sup>. <sup>1</sup>*Respiratory Medicine, Kyoto University Hospital, Kyoto, Japan;* <sup>2</sup>*Respiratory Medicine, Kurashiki Central Hospital, Kurashiki, Japan;* <sup>3</sup>*Respiratory Medicine, Kobe City Medical Center West Hospital, Kobe, Japan;* <sup>4</sup>*Internal Medicine, Ono Municipal Hospital, Ono, Japan*

**Rationale:** Healthcare-associated pneumonia (HCAP) is a new category of pneumonia. Since patients with HCAP are at risk for infection with drug-resistant pathogens and increased mortality compared to patients with community-acquired pneumonia (CAP), predicting their prognosis is an important issue in HCAP.

**Purpose:** To apply prognostic scoring systems of CAP (PSI, CURB-65 and Japanese A-DROP systems) in prospectively collected patients with CAP and HCAP.

**Methods:** Patients admitted in three educational hospitals in Japan were analyzed. Receiver operator characteristic curve (ROC) analyses were performed for the three scoring systems in CAP and HCAP. Further, better system was sought in HCAP.

**Results:** 927 cases with CAP (mean age 73.2 years) and 469 cases with HCAP (81.8 years) were enrolled. Compared to HCAP, CAP showed larger values of area under the curve (AUC) in all scoring systems (CAP vs HCAP: PSI 0.77 vs 0.64, CURB-65 0.76 vs 0.65, A-DROP 0.80 vs 0.65). To develop a better scoring system for HCAP, candidate factors for predicting prognosis were extracted by univariate analysis followed by stepwise method. By logistic regression analysis, serum value of albumin (Alb) was related to the prognosis. Each of AUC in prognostic ROC

analysis increased by around 0.05 when one point for low Alb ( $\leq 3.0\text{mg/dL}$ ) was added to each scoring system.

**Conclusion:** Existing scoring systems were not appropriate for predicting mortality in HCAP. Although incorporation of presence of low Alb value into the systems improved prediction of prognosis, more systematic reconstruction of scoring system adapted to HCAP would be needed.

#### P2474

##### Thrombocytosis is a marker of poor outcome in community-acquired pneumonia

Elena Prina<sup>1,2</sup>, Miquel Ferrer<sup>1,3</sup>, Otavio Tavares Ranzani<sup>1,4</sup>, Eva Polverino<sup>1,3</sup>, Catia Cilloniz<sup>1,3</sup>, Encarnación Moreno<sup>1,3</sup>, Josep Mensa<sup>5</sup>, Beatriz Montull<sup>6</sup>, Rosario Menéndez<sup>3,6</sup>, Roberto Cosentini<sup>2</sup>, Antoni Torres<sup>1,3</sup>. <sup>1</sup> *Servei de Pneumologia, Institut del Torax, Hospital Clinic, IDIBAPS, Universitat de Barcelona, Spain*; <sup>2</sup> *Emergency Medicine Department, IRCCS Fondazione Ca' Granda, Ospedale Maggiore Policlinico, Milan, Italy*; <sup>3</sup> *Centro de Investigación Biomedica en Red-Enfermedades Respiratorias, (CibeRes, CB06/06/0028), Barcelona, Spain*; <sup>4</sup> *Respiratory Intensive Care Unit, Hospital das Clínicas, Faculdade de Medicina da Universidade de São Paulo, SP, Brazil*; <sup>5</sup> *Servicio de Enfermedades Infecciosas, Hospital Clínic, IDIBAPS, Barcelona, Spain*; <sup>6</sup> *Servicio de Neumología, Hospital Universitario La Fe, Valencia, Spain*

**Background:** Thrombocytosis, often considered a marker of normal inflammatory reaction of infections, has recently been associated with increased mortality in community-acquired pneumonia (CAP).

**Methods:** We evaluated 2,423 hospitalized patients with CAP. We excluded patients with immunosuppression, neoplasm, tuberculosis or haematological disease. The aim was to assess characteristics and outcomes of patients with CAP and thrombocytosis (platelet count  $\geq 4 \times 10^5/\text{mm}^3$ ), compared with thrombocytopenia (platelet count  $< 10^5/\text{mm}^3$ ) and normal platelet count.

**Results:** Fifty-three patients (2%) presented thrombocytopenia, 204 (8%) thrombocytosis and 2,166 (90%) a normal platelet count. Patients with thrombocytosis were younger ( $p < 0.001$ ), while those with thrombocytopenia more frequently had chronic heart and liver disease ( $p < 0.001$  both). Patients with thrombocytosis more frequently presented respiratory complications such as complicated pleural effusion/empyema ( $p < 0.001$ ), whereas those with thrombocytopenia more often presented severe sepsis ( $p < 0.001$ ), septic shock ( $p = 0.009$ ), need for invasive mechanical ventilation ( $p < 0.001$ ) and ICU admission ( $p = 0.011$ ). Patients with thrombocytosis and thrombocytopenia had longer hospital stay ( $p = 0.004$ ), higher 30-day mortality ( $p = 0.001$ ) and readmission rate ( $p = 0.011$ ) than those with a normal platelet count. Multivariate analysis confirmed a significant association between thrombocytosis and 30-day mortality (OR 2.588 95% CI 1.502-4.460  $p = 0.001$ ).

**Conclusions:** Thrombocytosis in CAP is associated with poor outcome, complicated pleural effusion/empyema. Therefore thrombocytosis in CAP should encourage to rule out respiratory complications and could be considered for severity evaluation.

#### P2475

##### eCURB outperforms CURB-65 and A-DROP for predicting 30-day mortality in pneumonia

Barbara Jones<sup>1,2</sup>, Jason Jones<sup>2,3</sup>, Al Jephson<sup>2</sup>, Naresh Kumar<sup>2</sup>, Ben Briggs<sup>2</sup>, Caroline Vines<sup>4,5</sup>, Todd Allen<sup>4,5</sup>, Nathan Dean<sup>1,2</sup>. <sup>1</sup> *Pulmonary and Critical Care Medicine, University of Utah, Salt Lake City, UT, United States*; <sup>2</sup> *Pulmonary and Critical Care Medicine, Intermountain Medical Center, Murray, UT, United States*; <sup>3</sup> *Medical Informatics, Kaiser Permanente, Pasadena, CA, United States*; <sup>4</sup> *Emergency Medicine, University of Utah, Salt Lake City, UT, United States*; <sup>5</sup> *Emergency Medicine, Intermountain Medical Center, Murray, UT, United States*

**Rationale:** Severity assessment tools that use objective data available in the electronic medical record include CURB-65, A-DROP, and eCURB, an electronic version of CURB-65 using continuous variables (Jones et al, Chest. 2011;140:156-163). Our aim was to compare eCURB, CURB-65, and A-DROP versus 30-day mortality in a contemporary, emergency department pneumonia cohort.

**Methods:** We identified pneumonia patients by ICD-9 code plus compatible radiograph in 7 emergency departments Dec 1, 2009-Dec 1, 2010. Patients with community-acquired pneumonia (CAP) and health-care acquired pneumonia (HCAP) were identified. We extracted initial clinical features and triage information from the electronic medical record. We determined mortality from the Utah Population Database. Receiver operator characteristic (ROC) analysis of mortality was compared.

**Results:** We studied 2394 patients. 30-day mortality was 3.5% for 2061 patients with CAP and 16.2% for 333 patients with HCAP. The table shows areas under the curve (AUC) versus 30-day mortality.

30-day mortality AUC

	All Patients	CAP Patients	HCAP Patients
eCURB	0.85	0.87	0.74
CURB-65	0.81	0.83	0.74
A-DROP	0.82	0.83	0.75

**Conclusion:** eCURB outperformed CURB-65 and A-DROP for mortality predic-

tion in patients with CAP. For HCAP patients, all mortality predictors performed poorly.

#### P2476

##### The incidence and risk factors of ventilator associated pneumonia on the mortality in patients with traumatic brain injury

Kyriaki Tsikritsaki<sup>1</sup>, Ioannis Dimitroulis<sup>2</sup>, Katerina Dimakou<sup>2</sup>, Konstantina Mendrinou<sup>1</sup>, Irena Tsiomboutariou<sup>1</sup>, Michael Toubis<sup>2</sup>, George Koukoulitsios<sup>1</sup>. <sup>1</sup> *ICU, "G. Gennimatas" General Hospital, Athens, Greece*; <sup>2</sup> *6th Clinic, "G. Gennimatas" General Hospital, Athens, Greece*

**Background and Goal of Study:** Our objective was to describe the incidence, risk factors and evaluate the influence of Ventilator associated pneumonia (VAP) on the mortality and morbidity in patients with traumatic brain injury (TBI).

**Methods:** During December 2008-January 2012, 133 patients with TBI requiring mechanical ventilation more than 48 hours and GCS  $\leq 8$  were studied, 83 males and 50 females. The mean age was 36yrs. On admission to the intensive care unit (ICU) they had body mass index  $23 \pm 7 \text{ kg/m}^2$  and APACHE II score  $18 \pm 4$ . Out of 133 patients the 34 had co morbid medical illness.

**Results:** VAP occurred in 40 out of 133 TBI patients. There was no difference in predominance as far as gender was concerned. Incidence of VAP was significantly associated to patients requiring longer mechanical ventilation  $14 \text{ days} \pm 2$  and longer sedation  $10 \text{ days} \pm 2$ . Patients with co morbid medical illness and VAP were associated with a significantly greater degree of nonneurological organ system dysfunction, though there was no difference in frequency of VAP development compared to the patients without co morbid medical illness. Although VAP was not associated with increased hospital mortality, patients who developed VAP had a longer duration of mechanical ventilation ( $24$  versus  $8$  days,  $p < 0.0001$ ) and longer ICU lengths of stay ( $28$  versus  $10$  days,  $p < 0.0001$ ).

**Conclusions & Discussion:** The incidence of VAP in patients with TBI is high; however, its appearance does not affect the prognosis and does not seem to be associated with a significantly increased risk of mortality though increases the mechanical ventilation duration and the ICU length of stay.

#### P2478

##### Incidence, etiology and prevention strategies in early and late onset ventilator associated pneumonia in a tertiary care intensive care unit

Vikas Maurya, Puneet Khanna, Vipin Kauts, Rajesh Pande, Sharmila Sengupta, Tulsi Chugh. *Critical Care & Respiratory Medicine, BLK Super Speciality Hospital, New Delhi, India*

**Introduction:** Ventilator associated pneumonia (VAP) is associated with increased morbidity and mortality. VAP has been characterized into early (E-VAP) and late onset (L-VAP) depending upon the duration of mechanical ventilation.

**Objectives:** To ascertain the incidence of VAP and its common causative pathogens and compliance to VAP prevention strategies in an intensive care unit (ICU).

**Methods:** Prospective cohort surveillance of VAP was conducted by applying the definitions of the US Centers for Disease Control and Prevention National Nosocomial Infections Surveillance System (CDC-NNIS). Data on microbial isolates and antimicrobial resistance were also collected along with documentation of measures to prevent VAP.

**Result:** Between January 2010 to December 2011, 2756 patients who were hospitalized in the ICU, for an aggregate 10,948 patient days acquired 66 VAP infections. The ventilator days were 4190 and this amounts to overall VAP rate of 15.75 infections per 1000 ventilator days. The incidence of E-VAP and L-VAP was 24.2% & 75.8% respectively. The most common pathogens identified were *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Klebsiella spp*. Most of these were multidrug resistant. There was low compliance to hand hygiene, head of bed elevation, daily sedation interruption and oral care.

**Conclusion:** VAP was the commonest nosocomial infection in the ICU. Most of the VAP was late in onset (L-VAP) and was caused by multidrug resistant pathogens. There is a need to maximize compliance to VAP prevention measures as part of the routine management of patients on mechanical ventilation.

#### P2479

##### On improving assessment of in-hospital mortality and ICU admission in community-acquired pneumonia patients by using the e-CURB

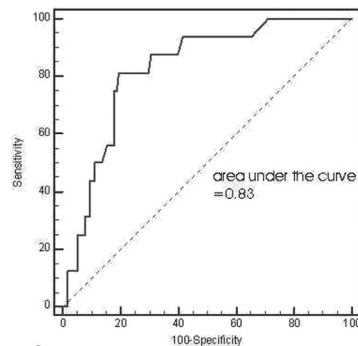
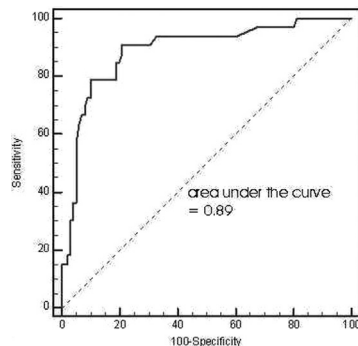
Lamia Shaaban, Mohamed Metwally. *Pulmonary Medicine, Assiut University Hospital, Assiut, Egypt*; *Pulmonary Medicine, Assiut University Hospital, Assiut, Egypt*

**Background:** Severity assessment in CAP is important to decide for the site of care. We aim to evaluate an electronically generated e-CURB elements in predicting in-hospital mortality and ICU admission in CAP.

**Material and methods:** 134 radiographically confirmed CAP were evaluated. We electronically calculated the area under the receiver-operating characteristic (ROC) curve for e-CURB and compared it with conventional CURB-65.

**Results:** Conventional CURB-65 could predict in-hospital mortality with an area under the curve (AUC) of 0.81 and ICU admission (AUC=0.87). The e-CURB proved to be superior to the conventional CURB-65 in predicting in-hospital mortality (AUC=0.83) ( $P < 0.0001$ ) (figure 1). Also, e-CURB was better in predicting ICU admission (AUC=0.89) ( $P < 0.0001$ ) (figure 2).

MONDAY, SEPTEMBER 3RD 2012

Figure 1. ROC for e-CURB in predicting in-hospital mortality ( $P < 0.0001$ ).Figure 2. ROC for e-CURB in predicting ICU admission ( $P < 0.0001$ ).

**Conclusions:** e-curb proved to be a valuable tool in predicting in-hospital mortality and ICU admission in patients with CAP with a significant superiority over conventional CURB-65 in both variables. Larger studies are recommended.

#### P2480

##### PaO<sub>2</sub>/FiO<sub>2</sub> ≤ 250 mm Hg, confusion and uremia predicted more mortalities of severe community-acquired pneumonia with three IDSA/ATS minor criteria

Qi Guo<sup>1</sup>, Hai-yan Li<sup>2</sup>, Yi-ping Zhou<sup>3</sup>, Ming Li<sup>4</sup>, Xiao-ke Chen<sup>5</sup>, Hui Liu<sup>6</sup>, Hong-lin Peng<sup>7</sup>, Hai-qiong Yu<sup>8</sup>, Xia Chen<sup>9</sup>, Nian Liu<sup>10</sup>, Li-hua Liang<sup>11</sup>, Qing-zhou Zhao<sup>12</sup>, Mei Jiang<sup>13</sup>. <sup>1</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>2</sup>Department of Primary Care, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>3</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>4</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>5</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>6</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>7</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>8</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>9</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>10</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>11</sup>Department of Radiology, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>12</sup>Department of Radiology, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>13</sup>Guangzhou Institute of Respiratory Diseases (State Key Laboratory of Respiratory Diseases), First Affiliated Hospital, Guangzhou Medical University, Guangzhou, China

**Background:** The Infectious Disease Society of America (IDSA)/American Thoracic Society (ATS) minor criteria for severe community-acquired pneumonia (CAP) are of unequal weight. Whether the patients meeting three strongest predictive values have more severity and higher mortality is unclear. The purpose was to determine the speculations.

**Methods:** 171 adult severe CAP patients fulfilling three IDSA/ATS minor criteria were reviewed retrospectively.

**Results:** Hospital mortality rose sharply from 8.3%, 7.7% and 16.7%, respectively, for patients with other three minor criteria, one of the three strongest predictive values plus other two minor criteria and two of the three strongest predictive values plus another minor criterion to 33.3% for patients meeting the three strongest predictive values [Arterial oxygen pressure/fraction inspired oxygen (PaO<sub>2</sub>/FiO<sub>2</sub>) ≤ 250 mm Hg, confusion and uremia].

The presence of three strongest predictive values was positively associated with sequential organ failure assessment (SOFA) scores and had a significant increased odds ratio for mortality of 4.500.

**Conclusions:** The presence of PaO<sub>2</sub>/FiO<sub>2</sub> ≤ 250 mm Hg, confusion and uremia

Table 1. Hospital mortality and the patterns of minor criteria

Minor criteria	No. patients	No. (%) deaths
Three strongest predictive values	21	7 (33.3)
Two of the three strongest predictive values plus another minor criterion	36	6 (16.7)
One of the three strongest predictive values plus other two minor criteria	78	6 (7.7)
Other three minor criteria	36	3 (8.3)
Total	171	22 (12.9)

predicted more severity and mortalities in severe CAP patients meeting three IDSA/ATS minor criteria.

#### P2481

##### CURB-65 score predicted mortality in community-acquired pneumonia better than IDSA/ATS minor criteria in a low-mortality-rate setting

Qi Guo<sup>1</sup>, Hai-yan Li<sup>2</sup>, Yi-ping Zhou<sup>3</sup>, Ming Li<sup>4</sup>, Xiao-ke Chen<sup>5</sup>, Hui Liu<sup>6</sup>, Hong-lin Peng<sup>7</sup>, Hai-qiong Yu<sup>8</sup>, Xia Chen<sup>9</sup>, Nian Liu<sup>10</sup>, Li-hua Liang<sup>11</sup>, Qing-zhou Zhao<sup>12</sup>, Mei Jiang<sup>13</sup>. <sup>1</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>2</sup>Department of Primary Care, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>3</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>4</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>5</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>6</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>7</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>8</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>9</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>10</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>11</sup>Department of Radiology, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>12</sup>Department of Radiology, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>13</sup>Guangzhou Institute of Respiratory Diseases (State Key Laboratory of Respiratory Diseases), First Affiliated Hospital, Guangzhou Medical University, Guangzhou, China

**Background:** The CURB-65 scoring system performs well at identifying patients with pneumonia who have a low risk of death. Whether it predicts mortality in community-acquired pneumonia (CAP) better than the 2007 Infectious Disease Society of America (IDSA)/American Thoracic Society (ATS) minor criteria in low-mortality-rate settings is not clear. The purpose of this study was to determine the speculation.

**Methods:** 1230 adult patients admitted to our hospital from 2005 to 2009 for CAP were reviewed retrospectively.

**Results:** The hospital mortality was 1.3%. Percentage mortality increased significantly with CURB-65 score and the increasing number of IDSA/ATS minor criteria present. The number of CURB-65 criteria or IDSA/ATS minor criteria present had significant increased odds ratios for mortality of 7.547 and 2.711, respectively. The sensitivities of a CURB-65 score of ≥ 3 and the presence of at least 3 minor criteria in predicting mortality from CAP was only 25% and 37.5%, with specificities of 99.2% and 96%, respectively. However, the sensitivities and specificities of a CURB-65 score of ≥ 2 and the presence of ≥ 2 minor criteria were 75% and 62.5%, and 91.8% and 86.5%, respectively. The area under the receiver operating characteristic curve for CURB-65 was 0.915 for predicting mortality, and the corresponding area for IDSA/ATS minor criteria was 0.805.

**Conclusions:** CURB-65 score predicted hospital mortality better than IDSA/ATS minor criteria, and a CURB-65 score of ≥ 2 or the presence of 2 or more minor criteria might be more valuable cut-off values for "severe" CAP in a low-mortality-rate setting.

#### P2482

##### Thrombin generation test – As a potential marker of severity and outcome of severe pneumonia with pulmonary sepsis

Tatiana Martynenko<sup>1,2</sup>, Irina Balatskaya<sup>1</sup>, Shoychet Yakov<sup>1</sup>, Momot Aleksey<sup>1</sup>, Olga Rusakova<sup>1</sup>, Anastasia Grebenyuk<sup>2</sup>. <sup>1</sup>Dept of Postdiploma Education, The Altai State Medical University, Barnaul, Russian Federation; <sup>2</sup>The Altai Regional Pulmonology Center, Municipal Hospital #5, Barnaul, Russian Federation

**Background:** There is an important interaction between inflammatory mechanisms and coagulopathy in severe pneumonia (SP) with pulmonary sepsis.

The aim. Determine the prognostic role of thrombin generation test (TGT) as a marker of severity in patients with SP with sepsis.

**Materials and methods:** 35 adults (18 years old or above) with SP and pulmonary sepsis were enrolled in the study. All patients were divided into two groups: survivors – 30 patients (85.7%, group 1) and died – 5 (14.3%, group 2) and stratified according to APACHE II score.

**Results:** According to TGT, the greater number of patients (84.6%) showed reduction in intensity of thrombin generation. We observed lengthening of Lag time

of thrombin, reduction of Peak thrombin, and increase in ttPeak, and in general - reducing endogenous thrombin potential (ETP) (table 1). Analysis of the average of the absolute values of thrombin generation curve showed that mean values of ETP and Peak thrombin remain below the reference in both groups, and Lag time and ttPeak - higher than in control. In group 2, in comparison with the first one, peak thrombin was lower at 82.9%, ttPeak was shorter by 15.1%, and ETP was reduced 3.9-fold.

When comparing patients according to severity, in group with APACHE II >20 (compared with APACHE II <10), reduced Peak thrombin by 71.8% and ETP by 58.2% were defined, while lengthening lag time at 70.7% and increasing ttPeak by 234.4%.

**Conclusion:** According to our preliminary data, reducing the intensity of TGT in SP with pulmonary sepsis is associated with more severe course of the disease and can be regarded as a predictor of poor outcome.

#### P2483

##### Developing hospital admission criteria for electronic pneumonia decision support

Barbara Jones<sup>1,2</sup>, Jason Jones<sup>2</sup>, Al Jephson<sup>2</sup>, Naresh Kumar<sup>2</sup>, Ben Briggs<sup>2</sup>, Caroline Vines<sup>3</sup>, Todd Allen<sup>2</sup>, Nathan Dean<sup>1,2</sup>. <sup>1</sup>Pulmonary and Critical Care Medicine, Intermountain Medical Center, Murray, UT, United States; <sup>2</sup>Pulmonary and Critical Care Medicine, University of Utah, Salt Lake City, UT, United States; <sup>3</sup>Emergency Medicine, University of Utah, Salt Lake City, UT, United States

**Rationale:** Severity assessment tools that use objective data available in the electronic medical record to predict mortality include CURB-65, eCURB (an electronic version of CURB-65 using continuous variables), and A-DROP. We developed an electronic decision support tool for the emergency department that recommends admission for patients with 1) eCURB 30-day mortality estimate  $\geq 5\%$  2)  $\geq 3$  severe community acquired pneumonia criteria (2007 IDSA/ATS), or 3) PaO<sub>2</sub>:FiO<sub>2</sub> ratio  $\geq 280$ . Our aim was to compare the tool's admission rule to the mortality predictors.

**Methods:** We identified pneumonia patients by ICD-9 code plus radiograph in 7 emergency departments Dec 1, 2009-Dec 1, 2010. We extracted initial clinical features, triage information and mortality from the electronic medical record; physician review identified multilobar infiltrates from radiograph reports. Simple agreement with hospital triage (outpatient versus inpatient) and mortality were compared.

**Results:** 57% of all patients were admitted (54% CAP and 76% HCAP) with a 30-day mortality of 5.5% (3.5% CAP, 17% HCAP). Table shows simple agreement with triage and mortality. While the actual admission rate was 57% with 13 outpatient deaths, the admission rule would have resulted in a 48% admission rate with 9 outpatient deaths.

% Agreement

	All (N=2394)		CAP (N=2060)		HCAP (N=334)	
	Triage %	Mortality %	Triage %	Mortality %	Triage %	Mortality %
Admit Rule	76	57	77	59	74	44
CURB-65 $\geq 2$	70	58	71	59	68	50
A-DROP $\geq 1$	78	48	78	49	75	40
A-DROP $\geq 2$	63	78	64	80	56	68

**Conclusion:** The tool's admission rule agreed acceptably with observed triage and might lower admission rate with improved patient safety.

#### P2484

##### Risk factors predicting mortality in patients with lung abscess

Shaista Ghazal, Nusrat Idrees, Ashok Kumar, Nadeem Rizvi. *Chest Medicine, Jinnah Post Graduate Medical Centre, Karachi, Sindh, Pakistan*

**Introduction:** Lung abscesses continue to express high mortality in patients hospitalised with the disease.

**Objectives:** To identify the factors associated with increased mortality in patients diagnosed with lung abscess.

**Methods:** Retrospective study performed via hospital records on patients admitted with lung abscess between January 2009 and January 2011 at the largest state-owned tertiary care centre in Karachi, Pakistan. Out of 41 patients hospitalised, 17 could not survive and were evaluated for factors to determine association with heightened mortality.

**Results:** Mortality due to lung abscess stood at 41.46% (17/41). Adult male patients were found to have a higher mortality with 13/17 (76.5%) expired patients being male. Majority (21/41, 51.2%) of the cases belonged to the 41-60 year old age group with highest mortality (9/17, 52.9%). Number of patients with blood sugar levels of >200 mg/dl who succumb to disease was 9/17, 52.9%. Patients with history of smoking, diabetes mellitus, and alcohol intake expressed mortality rates of 70.6%, 58.8%, and 17.6% respectively; while 29.4% of the mortalities were positive for *Pseudomonas aeruginosa* on sputum culture. A significant association was found between elevated mortality and low haemoglobin levels at time of admission; mortality was 76.5% (13/17, p<0.013) in patients with Hb between 7-10 mg/dL.

**Conclusions:** The risk factors involved with heightened mortality included male gender; older age; history of smoking, and diabetes. High blood sugar levels and

detection of *Pseudomonas aeruginosa* on sputum cultures were also implicated. Hb level of <10 mg/dL was a statistically significant predictive factor for increased mortality.

#### P2485

##### Thrombocytopenia predicts severity and mortality in CAP – Experience of developing country hospital

Farooq Oighor<sup>1</sup>, Muhammad Irfan<sup>2</sup>, Suleman Haque<sup>3</sup>, Ali Zubairi<sup>4</sup>, Javaid Khan<sup>5</sup>. <sup>1</sup>Pulmonary & Critical Care Medicine, Aga Khan University Hospital, Karachi, Sindh, Pakistan; <sup>2</sup>Pulmonary & Critical Care Medicine, Aga Khan University Hospital, Karachi, Sindh, Pakistan; <sup>3</sup>Pulmonary & Critical Care Medicine, Aga Khan University Hospital, Karachi, Sindh, Pakistan; <sup>4</sup>Pulmonary & Critical Care Medicine, Aga Khan University Hospital, Karachi, Sindh, Pakistan; <sup>5</sup>Pulmonary & Critical Care Medicine, Aga Khan University Hospital, Karachi, Sindh, Pakistan

**Background:** Platelets play role in inflammation and host defense mechanisms against microbial agents. We hypothesized that abnormal platelet count in CAP does predict severity and mortality. The objectives of this study were to determine the association of abnormal platelet count with the severity and outcome of CAP patients during their hospital stay.

**Methodology:** We conducted a retrospective cohort study of 293 consecutive patients admitted to a tertiary care hospital in Pakistan with CAP between January 2006 and December 2010. Patients with CAP who had abnormal platelet count at the time of presentation were placed in one group while those who had normal platelet count in other group. Dependent variable of the study was in hospital mortality.

**Results:** Thrombocytopenia was strongly associated with in hospital mortality (P = < 0.05). It was also associated with complications like respiratory failure, need for mechanical ventilation and complicated para-pneumonic effusion.

**Conclusion:** Thrombocytopenia at presentation in patients with CAP predicts in hospital mortality. It is cost effective when compared to CRP. It is good predictor of mortality for CAP in poor countries.

Abbreviations: CAP = Community Acquired Pneumonia. CRP = C Reactive Protein.

#### P2486

##### Clinical characteristics of immunocompetent patients with pulmonary cryptococcosis

Ho-Kee Yum, I-Nae Park, Sang Bong Choi, Young Min Lee, Sung Soon Lee, Hyuk Pyo Lee, Soo Jeon Choi. *Department of Internal Medicine, Paik Hospital, INJE University, Seoul, Korea*

**Objective:** Pulmonary cryptococcosis typically occurs in immunocompromised patients, but can also occur in immunocompetent patients. According to the host's immune status, inhaled spores may remain dormant in the lung or may spread to other parts. Thus, clinical manifestations of cryptococcosis can be highly variable, from asymptomatic pulmonary disease to life-threatening meningitis depending on the immunity. Our objective was to describe the clinical manifestations, radiologic findings, management and prognosis of pulmonary cryptococcosis in immunocompetent patients.

**Methods:** We retrospectively analyzed 12 cases of immunocompetent patients with pathologically proven pulmonary cryptococcosis during ten years.

**Results:** Mean patients age was 50 years (20-72 years) and 6 patients were male. The major clinical manifestations were cough (4 patients), chest pain (3 patients), and hemoptysis (1 patients). Four patients were asymptomatic. On CT findings, 10 patients showed single or multiple nodules (7 patients vs 3 patient), while 2 patients showed multiple consolidations. One patient was diagnosed by open lung biopsy, 11 patients by needle biopsy. Eight patients were treated with oral fluconazole and 2 patients with itraconazole. Seven patients of 10 patients with treatment with oral antifungal agents showed completed resolution, 2 patients showed partial resolution, and one patient showed no interval change. During follow-up period, all patients showed favourable outcome without relapse.

**Conclusion:** These results suggest that pulmonary cryptococcosis was found in all-aged immunocompetent patients with no or mild symptoms. Also treatment with oral fluconazole or itraconazole could achieve favorable outcome.

#### P2487



WITHDRAWN

**P2488****Weight of CURB-65 criteria for community-acquired pneumonia in a very low-mortality-rate setting**

Qi Guo<sup>1</sup>, Hai-yan Li<sup>2</sup>, Yi-ping Zhou<sup>1</sup>, Ming Li<sup>1</sup>, Xiao-ke Chen<sup>1</sup>, Hui Liu<sup>1</sup>, Hong-lin Peng<sup>1</sup>, Hai-qiong Yu<sup>1</sup>, Xia Chen<sup>1</sup>, Nian Liu<sup>1</sup>, Li-hua Liang<sup>3</sup>, Qing-zhou Zhao<sup>3</sup>, Mei Jiang<sup>4</sup>. <sup>1</sup>Department of Respiratory Medicine, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>2</sup>Department of Primary Care, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>3</sup>Department of Radiology, Affiliated Futian Hospital, Guangdong Medical College, Shenzhen, China; <sup>4</sup>Guangzhou Institute of Respiratory Diseases (State Key Laboratory of Respiratory Diseases), First Affiliated Hospital, Guangzhou Medical University, Guangzhou, China

**Background:** The CURB-65 score is a simple well validated tool for the assessment of severity in community-acquired pneumonia (CAP). Weight of each criterion in very low-mortality-rate settings is not clear.

**Objective:** To determine the weight.

**Methods:** 1230 adult patients admitted to our hospital from 2005 to 2009 for CAP were reviewed retrospectively.

**Results:** 30-day mortality rose sharply from 0%, 1.0%, 8.2% and 16.7%, respectively, for patients with CURB-65 scores of 0, 1, 2 and 3 to 100.0% for patients with the scores of 4 ( $p < 0.001$ ). Confusion had the strongest association with mortality.

Table 1. Association of CURB-65 criteria with 30-day mortality (n=1230)

Criteria	Alive (%)	Dead (%)	OR (95% CI)
Confusion	18 (81.8)	4 (18.2)	22.148 (6.516–75.288)
Urea >7 mmol·L <sup>-1</sup>	70 (89.7)	8 (10.3)	16.343 (5.957–44.838)
Respiratory rate ≥30 breaths/min	28 (93.3)	2 (6.7)	6.051 (1.313–27.896)
Low blood pressure	172 (97.7)	4 (2.3)	2.019 (0.644–6.333)
Age ≥65 yrs	322 (95.8)	14 (4.2)	19.391 (4.383–85.789)

Low blood pressure was not associated with mortality. Confusion, urea > 7mmol·L<sup>-1</sup> and age ≥ 65/yrs showed independent relationships with mortality (Odds ratio, 11.537, 5.988 and 10.462; respectively). Urea > 7mmol·L<sup>-1</sup> was most strongly associated with sequential organ failure assessment (SOFA) scores. Confusion was in closest relation to hospital length of stay. Age ≥ 65/yrs had the strongest association with costs.

**Conclusions:** The individual CURB-65 criteria were of unequal weight in predicting 30-day mortality, SOFA scores, hospital length of stay and costs in a very low-mortality-rate setting, and low blood pressure was not associated with mortality.

**P2489****Pulmonary CT findings of visceral larva migrans due to *Ascaris suum***

Koichi Honda<sup>1</sup>, Fumito Okada<sup>1</sup>, Yumiko Ando<sup>2</sup>, Asami Ono<sup>3</sup>, Hiromu Mori<sup>1</sup>. <sup>1</sup>Radiology, Oita University Faculty of Medicine, Oita, Japan; <sup>2</sup>Radiology, Nishibeppu National Hospital, Oita, Japan; <sup>3</sup>Radiology, Oita Prefectural Hospital, Oita, Japan

**Objective:** To retrospectively evaluate the CT findings of pulmonary involvement in patients with visceral larva migrans due to *Ascaris suum*.

**Methods:** Institutional review board approval was obtained, and informed consent was waived. Chest CT scans obtained between January 1994 and December 2007 in 35 patients with *Ascaris suum* were retrospectively evaluated by three chest radiologists. In 4 patients who underwent surgical or transbronchial biopsy, comparisons of the CT images with the actual specimens were performed.

**Results:** On CT scans, abnormal findings were seen in 30 patients. The most common abnormality consisted of nodules (n=20) in which the majority had a halo of ground-glass attenuation (n=18), followed by ground-glass attenuation (n=19), and interlobular septal thickening (n=15). These abnormalities were predominantly seen in the peripheral lung (n=25). Of the 7 patients who underwent follow-up CT scans, nodules (n=6) and ground-glass attenuation (n=5) had migrated in 4 patients. Pathologically, these findings corresponded to marked eosinophilic infiltration into the interstitium.

**Conclusions:** These CT findings are considered to be suggestive of thoracic involvement in patients with visceral larva migrans due to *Ascaris suum*.

**P2490****Community acquired pneumonia in the emergency department: Comparison of clinical indication to in-hospital treatment and severity scales predicting mortality**

Rodolfo Ferrari<sup>1</sup>, Fabio Tumietto<sup>2</sup>, Fabrizio Giostra<sup>1</sup>, Sara Tedeschi<sup>2</sup>, Mauro Bernardi<sup>3</sup>, Pierluigi Viale<sup>2</sup>, Mario Cavazza<sup>1</sup>. <sup>1</sup>Dipartimento Emergenza/Urgenza, Chirurgia Generale e dei Trapianti. U.O. di Medicina d'Urgenza e Pronto Soccorso, Policlinico Sant'Orsola – Malpighi, Azienda Ospedaliero Universitaria di Bologna, Università degli Studi di Bologna; <sup>2</sup>Dipartimento Malattie Apparato Digerente e Medicina Interna. U.O. di Malattie Infettive, Policlinico Sant'Orsola – Malpighi, Azienda Ospedaliero Universitaria di Bologna, Università degli Studi di Bologna, Italy; <sup>3</sup>Dipartimento Malattie Apparato Digerente e Medicina Interna. U.O. di Semeiotica Medica, Policlinico Sant'Orsola – Malpighi, Azienda Ospedaliero Universitaria di Bologna, Università degli Studi di Bologna, Italy

**Introduction:** Severity scoring systems (SSS) are used to predict risk, to help decisions about management strategies. The most notable scales in clinical use for Community acquired pneumonia (CAP) in the Emergency Department (ED) are CURB65 and CRB65

**Objective:** To analyze cases in which the clinical judgement to admit and treat in-hospital a Patient with CAP disagreed with the low risk profile established by SSS

**Materials and methods:** Observational clinical study in the ED of a university teaching hospital, enrolling every adult Patient with CAP related hospitalization in 4 months period.

**Results:** 73 Patients were emergently admitted; 172 resulted in high-intermediate risk class according to SSS. We compared high-intermediate versus low risk groups. The first were higher in mortality, Ddimer, urea, creatinin, CK, CKMB, LDH, NTproBNP, dyspnoea, neurologic dysfunction, need for mechanical ventilation or management in High Dependency Unit; and lower in SpO<sub>2</sub> and rate of antibiotic treatment previously started. When the decision to admit showed discordance between SSS risk profile and clinical judgement, some elements were often involved: social and welfare aspects, chronic diseases, previous treatment failure, laboratory abnormalities, respiratory failure, chest Xrays characteristics.

**Discussion:** In the ED, careful clinical judgement is still irreplaceable in decision and management processes, beyond the help routinely added by SSS. New studies will define which parameters to develop to increase the value of some pivotal aspects in the triage process of CAP in the ED, to focus on the real need for hospitalization in the single Patient.

**P2491****The influence of respiratory infection on bronchial asthma**

Dmitry Ruzanov, Nataly Efimova, Elena Davidovskaya, Tatyana Baranovskaya, Irina Buynevich, Nataly Plotnikova, Olga Serdyukova. Department of Pulmonology and TB, Gomel State Medical University, Gomel, Belarus

Acute respiratory infection (ARI) intensify the severity of inflammation reaction of bronchial asthma (BA).

**Aim:** To study the influence of ARI on the level of the control over BA and the immunology of this combination and the possibilities of treatment.

**Method:** The clinical monitoring over 316 patients with bronchial asthma for a year, the immunological research and the results of treatment with affine purified antibodies for gamma-interferon of the human (48 cases).

**Results:** During the observation there were fixed 4,1±0,3 episodes of ARI for each patient. Analyzing the graph of frequency of ARI with BA, some differences with seasonal virus ARI attract our attention. There is no traditional apex of seasonal virus ARI in the February, the reduction of tension is seen only by May, summer months are not also free from ARI, and the intensity of winter months the frequency of ARI reaches already in October. There is not direct link between the frequency of ARI and the level of control over asthma. The dependence of the dose of ICS and the frequency of ARI was also detected. On the whole, each patient received 2,7±0,6 the course of antibiotics therapy relatively to respiratory pathology. 94,4% of patients got different mukoactive drugs.

Low tension of the immunity was fixed: CD4/CD8 index was 1,23±0,08, phagocytic index was 62±2,1%. After three month of the use of antibodies for gamma-interferon frequency of ARI was marked, the real improvement of the rate of

MONDAY, SEPTEMBER 3RD 2012

the cellular immunity, the increase of the level of IgG to  $9,88 \pm 0,41$  l/l with the following return to the previous level, and also the real reduction of the level of IgE to  $69,2 \pm 5,5$  among the patients with exogenous asthma.

**P2492****Risk factors, etiology and prognosis of adult patients with hospital -acquired pneumonia in Shanghai**

Ning Li, Qijian Cheng, Department of Respiratory Diseases, Shanghai Jiao Tong University School of Medicine, Shanghai, China

**Objective:** To investigate clinical features, risk factors, drug resistance, and clinical outcomes of hospital-acquired pneumonia (HAP) in Shanghai.

**Methods:** From November 2007 to December 2009, HAP was observed and prospectively studied in Shanghai seven large general hospitals. Clinical data and etiology of pneumonia were recorded. Blood and sputum cultures, identification of bacteria in specimen and drug sensitivity test were performed.

**Results:** We included 204 patients (mean age  $68.07 \pm 16.61$  years [ $\pm$  SD]), 58.3% more than 70 years old) mainly from surgical wards, surgical ICU, medical wards, and medical ICU. Patients were complicated with cerebral vascular disease (19.61%), diabetes mellitus (14.22%), or abdominal surgery (11.76%). Ventilator-associated pneumonia occurred in 20.6% of the cases. Total mortality was 15.69%. Increased heart rate, decreased arterial PH, hypoxia, high glucose, increased plasma creatinine and vasopressor use were associated with the poor outcome in patients with HAP. In all bacterial isolates from HAP, 64.90% were gram-negative bacilli bacteria, including *Acinetobacter baumannii*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, and *Escherichia coli*. 26.5% of the isolates were *Staphylococcus aureus* and the rate of MRSA was 65.4%.

**Conclusion:** The elderly, cerebrovascular diseases, and diabetes are risk factors of HAP and septic shock is the most important complication associated with poor prognosis of HAP. In this setting, *Acinetobacter baumannii*, *Pseudomonas aeruginosa*, *Klebsiella pneumoniae*, *Escherichia coli*, and *Staphylococcus aureus* (MRSA 60%) should be considered as the common etiologic pathogens of HAP.