271. Assessment of severity and predictors of outcomes in community-acquired pneumonia

P2476

CURB65 versus PSI in assessing the severity of CAP of elderly patients

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Background: PSI and CURB65 are two of the most widely used scales for predicting mortality related to CAP. However, CURB65 accuracy to predict mortality has not been validated in elderly population.

Aim: To analyze the predictive mortality value of CURB65 scale versus PSI score in patients with CAP older than 65 years old.

Methods: A 12 months prospective multicenter and longitudinal study was performed in several hospitals of a Spanish mediterranean area (Comunidad Valenciana). We included patients over 65 with CAP diagnosis. We analyzed mortality related factors (comorbidities, clinical, radiological and laboratory findings, complications) and mortality risk related to PSI or CURB65 scores. Statistical analysis included Chi Square with significance p<0.05.

Results: 750 patients were included, with mean age of 76.7 \pm 7.5 years, 63.9% of them were men. 5.1% died. In our cohort, mortality rate attending PSI score or CURB65 was consistent as reported series (Table 1). However, CURB65 classified as low risk a higher percentage of patients considered by PSI score as moderate-severe risk p<0.001 (Table 2).

Table 1

	Cohort patients (%)	PSI (%)		Cohort patients (%)	CURB65 (%)
I	-	0.1	1	2.7	2.1
Π	0	0.6	2	8.7	9.2
III	1.2	0.9-2.8	3	16.2	14.5
IV	6.5	8.2-9.3	4	26.7	40
V	16.8	27-29.2	5	50	40

Table 2

CURB-65	PSI				
	Low risk (I–III), %	Moderate risk (IV), %	Severe risk (V), %		
Low risk (0–1)%	85.3	51.1	18.7		
Moderate risk (2)%	14.7	40.6	38.1		
Severe risk (3–5)%	0	8.4	43.3		

Conclusions: Although mortality rate in our cohort is closed to reported data, CURB65 in elderly patients with CAP underestimate the severity of CAP, compared to PSI scores.

P2477

Role of angiopoietins Ang-1 and Ang-2 for the development of acute lung injury in pneumococcal pneumonia

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In pneumonia, pathogen-host interaction may evoke pulmonary endothelial permeability despite efficient antimicrobial therapy, resulting in life-threatening lung failure. Angiopoietin (Ang)-1 mediated Tie2-activation reduces and the Ang-1 antagonist Ang-2 increases inflammation and endothelial permeability in sepsis, but the role of the Ang-/Tie2-system in pneumonia has not been examined.

Serum samples of pneumonia patients, human lung tissue (post mortem), lungs of S. pneumoniae infected mice, pneumolysin-stimulated isolated perfused and ventilated mouse lungs and human microvascular endothelial cells (HMVEC) were investigated.

We observed decreased Ang-1 and increased Ang-2 serum levels in pneumonia patients. Immunohistochemistry staining of human lung tissue revealed that Ang-2 was exclusively expressed in endothelial cells, whereas Ang-1 was expressed in different cell types. In HMVEC, mRNA expression of Ang-1 and Tie2 was decreased after pneumolysin stimulation, and Ang-2 expression was increased. Further, we detected reduced pulmonary mRNA expression of Ang-1 and Tie2 and increased Ang-2 expression in murine lung tissue following in vivo infection with S. pneumoniae

Therapeutic treatment with Ang-1 reduced neutrophil recruitment, inflammatory cytokines in bronchoalveolar lavage and lung permeability in pneumonic mice. When mice were pretreated with siRNA (Atuplex), pneumolysin-evoked perme-ability in isolated perfused lungs of siRNA^{Ang-2} pretreated mice was reduced as compared to lungs of control mice.

These results suggest a central role of the Ang-/Tie2-system in pneumonia-evoked inflammation and permeability, and provide a new therapeutic perspective for severe pneumonia.

P2478

Differences between local and systemic inflammatory response in patients

with community acquired pneumonia (CAP) Letizia Corinna Morlacchi¹, Stefano Aliberti², Sonia Seghezzi³, Valeria Giunta¹, Fabio Giuliani¹, Samantha Galbiati¹, Barbara Dallari¹, Andrea Gramegna¹ Marta Di Pasquale¹, Giulia Spoletini¹, Anna Maria Brambilla³, Jose Bordon⁴, Francesco Blasi¹. ¹Dipartimento ToracoPolmonare e CardioCircolatorio, Università degli Studi di Milano, IRCCS Fondazione Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy; ²Dipartimento di Medicina Clinica e Prevenzione, Università degli Studi di Milano-Bicocca, A.O. San Gerardo, Monza, Italy; ³Dipartimento di Medicina d'Urgenza, Fondazione IRCCS Fondazione Ca' Granda Ospedale Maggiore Policlinico, Milano, Italy, ⁴Infectious Diseases, Internal Medicine Department, Providence Hospital, Washington, DC, United States

Understanding inflammatory response is a crucial issue in the management of CAP. The aim of our study was to evaluate both local (lung) and systemic (serum) inflammation on admission in hospitalized patients with CAP.

An observational prospective study was performed on consecutive patients hospitalised for CAP from April to December 2010 at the Respiratory Dpt., Policlinico Hospital, Milan, Italy. Within 24 hours after admission, specimens of blood and exhaled breath condensate (EBC) were collected. The following cytokines were detected on both samples with a high sensitivity immunoassay: pro-inflammatory (IL1a, IL1b, IL2, IL6, IL8, TNFa and IFNy) and anti-inflammatory (IL4 and IL10).

A total of 43 subjects were prospectively enrolled (26 males; mean±SD age: 71±18 yrs). Local and systemic inflammatory patterns on admission are shown in Table (Mean \pm SD).

Cytokine, pg/mL	EBC	Serum	
IL2	$0.46 {\pm} 0.48$	1.28 ± 1.90	
IL4	1.69 ± 0.71	1.43 ± 0.64	
IL6	0.01 ± 0.02	108.33 ± 150.03	
IL8	0.34±1.04	128.80 ± 340.03	
IL10	0.20 ± 0.16	1.49 ± 1.50	
IFNγ	0.02 ± 0.07	12.79±38.66	
TNFα	0.10 ± 0.29	13.50±23.62	
IL1α	0.10±0.13	0.17±0.36	
IL1β	0.21±0.33	1.20 ± 1.85	

Pro-inflammatory interleukins were increased in patients undergoing mechanical ventilation on admission in comparison to the rest of the population in both serum (IL1 α 0.57 \pm 1.02 vs. 0.11 \pm 0.12, respectively, p= 0.007) and EBC (IL1 α 0.31 \pm 0.28 vs. 0.08±0.06, respectively, p=0.001).

These findings may help to understand the decompartmentalization of the inflammatory response, which takes place since the very early stages of the infection in hospitalized patients with CAP.

P2479

Validity of CRB-65 in LRTI in primary care: A prospective study in 12 European countries

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Background: CRB-65, a useful tool to predict community-acquired pneumonia (CAP) outcome in hospitals, has been recommended for use in primary care. CRB-65 scores are calculated by assigning one point for each of: the presence of Confusion, Respiratory rate ≥ 30 per minute, Blood pressure systolic < 90 mm Hg or diastolic ≤ 60 mm Hg, and age ≥ 65 years.

Aim: To assess the validity of CRB-65 to predict poor prognosis in adults presenting to primary care with lower respiratory tract infection (LRTI).

Methods: Clinicians prospectively recorded clinical features on a case registration form. Patients had a chest X-ray within 7 days after inclusion. A notes review was performed. We used a two-level logistic regression model (with patients nested within clinicians) to assess the association between a CRB-65 score \geq 1 and mortality and a combination of re-consultation and hospital admission, and tested for interaction to assess differences in these outcome between patients with and those without CAP.

Results: None of the 3112 included patients died due to the LRTI. Complete data were available in 2627 (84%) patients. Of these, 866 (33%) had a CRB-65 score \geq 1, 108 (4%) had CAP, and 488 (19%) re-consulted or were admitted to hospital. Both a CRB-65 score \geq 1 and CAP were associated with more re-consultations or hospital admissions (odds ratio (95%CI): 1.32 (1.06-1.64) and 2.18 (1.13-4.21), respectively). The interaction term was not significant (1.17 (0.57-2.41)).

Conclusion: In patients presenting to primary care with LRTI, low mortality and low prevalence of CAP limit the usefulness of CRB-65. Nevertheless, a CRB-65 score ≥ 1 is associated with a significant increase in re-consultations and hospital admissions.

P2480

Vascular events following hospitalisation for community acquired pneumonia

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Objective: To determine if patients with community acquired pneumonia (CAP) are at increased risk of vascular events following discharge.

Methods: Patients enrolled in a prospective study for CAP who survived to hospital discharge were followed up at 1 year. A cohort matched to age, sex, co-morbidities and vascular risk factors were included and the incidence of vascular events and mortality were recorded.

Results: 1321 patients were included (50.3% male, median age 65 (IQR 48-77), 23.7% had a prior history cardiovascular events) with 1321 matched controls. 12.3% of CAP patients died after discharge by 1 year, with 28.9% attributed to cardiovascular events or stroke. The incidence increased with age.

156 patients required hospitalisation within 1 year for one or more vascular event; myocardial infarction (MI) n=74, cardiac failure n=61, for cardiac arrhythmia n=31 and stroke n=12. Of the 74 patients with MI, there was a significantly increased incidence when compared to the control group (fig1).

Age Group	CAP . Events	Total	Control grou Events Tota	ap N Odds	Ratio (95% CI)		Odds Ratio (95% CI)
16-44	2	281	0 28	1 5.04	10.24.105.371		
45-64	16	377	2 37	7 8.31	[1.90, 36.40]		
85-74	17	268	5 26	8 3.5	56 [1.29, 9.80]		
75.	39	395	11 39	5 3.8	32 [1.93, 7.58]		
All age groups	74	1321	18 132	1 4.3	0 [2.55, 7.23]		
						0.05 Decrea	0.2 5 ased incidence of MI Increased Incidence of M
Age Group	CA Eve	P group nts Total	Control Events	group Total	Odds Ratio (96% CI)	Odds Ratio (95% CI)
16-44	:	3 281	0	281	7.08 [0.36,	137.61]	
45-54	1	3 128	1	128	8.47 [1.04	68.71]	
55-64	21	3 249	6	249	5.13 [2.09	12.63]	
65-74	31	268	9	268	4.61 [2.1	8, 9,76]	
75-84	65	5 305	19	305	4.08 [2.3	8, 6.991	
85+	2	2 90	15	90	1.62 (0.7	8, 3.371	++
	10	1 1 2 21	50	1321	3.58 [2.5	8, 4.96]	
All age groups	10.						
All age groups	10.						

Using multivariate logistic regression analysis, major predictors of cardiovascular deaths following CAP were age (AOR 1.04 95%CI (1.02-1.07), p <0.0001), prior history of cardiovascular events (2.70 (1.47-4.96), p=0.001), ICU admission during hospital admission (1.87 (1.04-3.38), p=0.04) and anaemia (0.98 (0.97-0.99), p=0.0007).

Conclusion: Hospitalisation for CAP is associated with an increased risk of cardiovascular events and mortality at 1 year.

P2481

Clinical failure in hospitalized patients with community acquired pneumonia (CAP): Preliminary results from the FAILCAP study

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Although clinical failure is one of the most relevant outcomes in CAP patients, there is little discussion in literature on its incidence and etiology. The aim of the study was to evaluate incidence, risk factors and outcomes of CAP patients undergoing a clinical failure during hospitalization. An international, multicenter, prospective, observational study was performed from October 2009 to December 2010 in 8 Respiratory Dpts, enrolling consecutive patients hospitalized with CAP (ClinicalTrials: NCT01143155). Clinical failure was defined as either acute pulmonary or hemodynamic deterioration or in-hospital death. Risk factors associated to the development of clinical failure were analyzed by a multivariable analysis. Among the 431 patients enrolled (56% males; mean±SD age:73±16 yrs), incidence of clinical failures was 17% (72 patients). The majority of the clinical failures were related to the pneumonia. The development of cardiovascular events was significantly higher in patients who failed in comparison to the rest of the population (36% vs. 17%, respectively, p<0.001). At the multivariable analysis the only risk factor independently associated to the development of clinical failure during hospitalization was the severity of the disease on admission evaluated with the PSI. Mortality at 30 days after the diagnosis of the pneumonia was significantly higher among patients who failed in comparison to the rest of the population (72% vs.4%, respectively, p<0.001). A better understanding of clinical failure would be useful in order to prevent complications during the hospitalization, to develop new treatment modalities and, thus, to improve outcomes.

P2482

Does it matter which set of observations are used to calculate the CURB65 score for pneumonia?

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Background: The British Thoracic Society has recommended that the CURB65 score is applied as the initial severity assessment strategy in hospitals for community acquired pneumonia (CAP), in conjunction with clinical judgement. Evidence for the scoring system is robust and its use at initial presentation enables patients to be stratified according to increasing risk of mortality.

Aim: To assess whether the CURB65 score was recorded using observations made during the initial hospital assessment or at a later stage.

Methods: This was a prospective study of random CAP cases (radiologically confirmed) admitted to a large University Hospital between Jan-Feb 2011. CURB65 documentation in the case notes was studied to assess whether the score was performed on the basis of initial observations.

Results: A total of 55 cases were studied (M: 25, F: 30), mean age 75 years. The CURB65 score was recorded in 44/55 (80%) cases. The score was recorded on the basis of admission observations in 70% of cases (31/44) and in 30% of cases (13/44) observations documented at a later stage. For the latter group, the documented cumulative score was 35, significantly higher than the "actual cumulative score" when calculated retrospectively using admission observations 25 (p value <0.01).

Conclusions: Calculation of the CURB65 score using observations made after the initial assessment can significantly affect the score recorded. This may potentially lead to the overuse of antibiotic therapy. In order to improve the quality of care for CAP patients, measures should be taken to ensure that CURB65 is recorded appropriately.

P2483

Severe complicated pneumococcal pneumonia in young adults

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Background: Pneumococcal pneumonia causes parapneumonic effusion (PPE) in 40%-57%. Severity can be influenced by both host characteristics e.g. co-morbidity, age and vaccination status and, bacterial factors.

Aims and objectives: To study the relationship between host characteristics (age, co-morbidity and previous vaccination) and disease severity in adults admitted with pneumococcal pneumonia.

Methods: A cohort of 21 inpatients with pneumococcal pneumonia between December 2010 to January 2011 were retrospectively studied using electronic patient records, medical notes and the PACS system. Uncomplicated PPE (UPPE) was defined as pleural fluid pH >7.2, complicated PPE (CPPE) as pH <7.2 and empyema as visible purulent fluid.

Results: 21 patients were admitted with pneumococcal pneumonia, 8 male and 13 female, median age 48 years (range 18-76). 9 (43%) had no associated comorbidity, of which 7 were <65 years. 6/9 developed pleural effusion (1 UPPE, 4 CPPE and 1 empyema), 4 required chest drainage, none of these 4 were vaccinated. All patients who developed pleural effusion or empyema, 8/21 (38%), had an admission CRP >100 (range 101->500) and albumin <35 (range 16-32).

7/21 (33%) patients were admitted to the intensive care unit (ICU). 4/7 had no associated co-morbidities, median age was 33 (range 29-48) and all 4 patients were not vaccinated.

Conclusion: Our study highlights that along with high risk groups, young unvaccinated adults with no co-morbidity are also at risk of developing severe pneumococcal pneumonia with complicating pleural effusion or empyema.

P2484

Role of pneumococcus urinary antigen testing in the clinical presentation and outcome of pneumococcal bacteraemic community acquired pneumonia Luis Alberto Ruiz, Maria Alfonso, Ainhoa Gomez, Sandra Pedrero,

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Aim: To describe the clinical characteristics and outcome of a group of patients diagnosed with pneumococcal bacteraemic community acquired pneumonia (PB-CAP) depending on the results of pneumococcus urinary antigen testing (PUAT). **Methods:** We have studied all patients admitted to the Respiratory Service and/or ICU of our hospital for 10 years. Patients have been divided into two groups according to the results of PUAT (BINAX[®]). Exclusion criteria included (1)acquired immune deficiency syndrome, other immunodeficiencies or under immunosupresive treatment; (2) health care associated pneumonia.

Results: We have studied 250 patients, 233 out of them underwent UPADT.

	PUADT (+)	PUADT (-)	р
	N=158 (67,8%)	MEAN N=75 (32,2%)	
Elapsed time from triage to antibiotic administration	2,8	3,8	0,048
Switching from IV to oral therapy (days)	6	4,1	0,011
ICU (days)	4,4	1,5	0,020
Mean hospital stay	12,6	8,2	0,012
	PAT		
Age≥65 años	45,5	50,6	ns
Comorbidities	52,5	54,6	ns
"Typical" CAP symptoms	31	26,6	ns
ICU	32,2	13,3	0,002
IMV	12,6	6,6	ns
PSI 4,5	49,3	44	ns
CURB≥3	32,2	24	ns
Mortality	8.2	4	ns

Conclusions: 1. PUAT positivity was associated with an early antibiotic prescription at the emergency department at admission. 2. Patients with positive PUAT were more frequently admitted to ICU. They also had a higher mean hospital stay but there were no significant differences regarding severity according to PSI and CURB score. 3. Patients under negative PUADT had a lower but no significant mortality rate.

P2485

Is pneumonia in elderly an enigma: A study from a multispecialty hospital in rural India

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Aim: To study the manifestations and outcome of pneumonia in elderly from a rural background in India.

Methods: Retrospective analysis of clinical, radiological and laboratory features and treatment outcome of severe community-acquired pneumonia among eldely who were managed in a multispecialty hospital in rural India during preceding 2 years.

Results: 28 cases in this study included 22 males and 6 females in the age group of 72 to 88 years. 16 cases had comorbidities- COPD in 8, diabetes in 5 and chronic liver disease in 3. Etiology included streptococcus pneumoniae in 11, staphylococcus aureus in 5, H. influenzae in 3 and klebsiella pneumoniae in 2 cases. In 7 cases definitive organism could not be isolated. Only 6 had typical features of fever, chest pain, cough, pulmonary consolidation and neutrophil leucocytosis. Extrapulmonary features misleading initial diagnosis were predominant in the remaining cases. All of them had altered mental status and profound general weakness with minimal and non specific chest findings. 4 had pain abdomen and loose motions as presenting features. Among cases with atypical presentation 8 had leucopenia while the remaining had neutrophil leucocytosis.18 cases required hospitalisation of more than 3 weeks and only 14 responded to therapy.Pneumococcal-fluoroquinolone resisance was observed in 2 cases.16 cases required mechanical ventilation and among them only 2 survived. Ventilatory associated lung injury was present in 3 cases. Non responders had severe sepsis with ARDS and multiorgan failure. Conclusion: Pneumonia in elderly is an enigma, often caused by common pathogens and is associated with atypical features, complicated course and poor treatment outcome.

P2486

Prospective comparison between chest ultrasound and X-ray in two planes in patients with suspected community-acquired pneumonia. Intermediate results (02/2011) of a prospective multicenter DEGUM-/ÖGUM-study Angelika Reissig¹, Christine Mempel¹, Roberto Copetti², Andreas Schuler³, Stefano Aliberti⁴, Peter Zechner⁵, Alexander Heinzmann⁶, Rotraud Neumann⁷, Gebhard Mathis⁸, Claus Kroegel¹. ¹Pneumology & Allergology, Friedrich-Schiller-University, Jena, Germany; ²Emergency Department, San Antonio Abate, Hospital Tolmezzo (Udine), Tolmezzo, Italy; ³Department of Internal Medicine, Helfenstein Clinic, Geislingen, Geislingen, Germany; ⁴University Milano, University Milano, Milano, Italy; ⁵Hospital Graz West, Hospital Graz West, Graz, Austria; ⁶Department of Internal Medicine, Hospital Reutlingen, Germany; ⁷Institut of Diagnostic and Interventional Radiology, Friedrich-Schiller-University Jena, Institut of Diagnostic and Interventional Radiology, Jena, Germany; ⁸Medical Practice Rankweil, Medical Practice, Rankweil, Austria

Aim: The aim of the prospective study is to define the sensitivity of chest ultrasound (US) in diagnosing and follow-up of community- acquired pneumonia (CAP).

Patients and methods: US was performed in 326 patients (age 18-95 years; 211 males, 115 females) with suspected CAP. The results were first compared to X-ray in two planes. In case of positive US and negative or inconclusive X-ray a low-dose computed tomography (CT) was performed. Sonographic characterisation of pneumonia was carried out at day 0, between day 5-8 and between day 13-16. Results*: US / X-ray / CT / Number of patients:

negative / negative / not done / n=109

negative / inconclusive / negative / n=8

positive / positive / not done / n=163

positive / inconclusive / positive / n=10

positive / negative / positive / n=13

positive / negative / negative / n=1

positive / inconclusive / negative / n=2

negative / positive / not done / n=13 negative / inconclusive / positive / n=2

*US was inconclusive in 5 patients, which had to be deleted according to the study

protocol. **Conclusions:** The intermediate results suggest a high sensitivity and specificity of US in discussion and follow up CAD. The first results will be excluded in

of US in diagnosing and follow-up CAP. The final results will be available in September 2011.

P2487

Does a clinical score helps in the management of hospital-acquired pneumonia in nonventilated patients?

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Hospital-acquired pneumonia (HAP) is increasingly frequent in nonventilated (NV) patients. Because of the difficulty of obtaining invasive diagnostic procedures outside an intensive care unit (ICU), a clinical score could be useful for the management of NV patients. We tested the diagnostic accuracy of a score (SCOPNOFOR) suitable for NV patients with clinical suspicion of HAP, obtained by combining the following clinical parameters (minimal value = 0, maximal value = 9): non cancerous comorbid condition (0=absent, 1=present); solid cancer (0=absent, 1=present); tracheal secretions (0=absent, 1=nonpurulent, 2=purulent); previous antibiotics (0=yes, 1=no); radiographic infiltrate (0=no or diffuse, 2=localized); NV ICU (2) or ward (0) patient. The score was calculated before a protected specimen brush was obtained by bronchoscopy in all cases and its value was computed with bacteriological result to assess sensitivity (Se) and specificity (Sp). HAP was confirmed in 45 (54%) of 84 suspected episodes disclossing in major part nonfermenting (35.6%) and enteric (42.2%) gram-negative bacilli, staphylococcus (26.7%) and streptococcus (26.7%) spp. Polymicrobial HAP was present in 37.8% of episodes. The mean \pm SD SCOPNOFOR value was 5.3 \pm 1.6 and 4.3 \pm 1.5, respectively, for the 45 HAP episodes and the 39 non confirmed HAP episodes (p=0.003). Se and Sp were respectively at a SCOPNOFOR value more than 5, 53% and 79%, and more than 6, 27% and 95%. We conclude that SCOPNOFOR misclassify approximately 50% to 75% of patients with definite HAP according to the chosen cut-off. These data support the need for establishing an etiologic diagnosis in suspected HAP in NV patients.

P2488

Comparison of four systems for assessing severity of community acquired pneumonia

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Introduction: The use of severity scores for community acquired pneumonia (CAP) is recommended by many clinical guidelines. However, debate about the preferred system is ongoing.

Objective: To compare the performance of 4 systems to identify severe CAP. **Material and methods:** We reviewed 176 patients diagnosed with CAP, admitted in a Pneumology ward, from January 2007 to July 2009. We compared 4 systems: Pneumonia Severity Index (PSI), CURB65, modified American Thoracic Society criteria for severe pneumonia (ATSm) and SCAP score.

We divided the patients in 2 groups: low/intermediate risk and high risk, the later defined as CURB65 \geq 3, PSI classes IV/V, ATSm – \geq 1 major criteria or \geq 3 minor criteria and SCAP score – \geq 1 major criteria or \geq 2 minor criteria.

We evaluated the performance of these systems in predicting patient adverse outcomes, defined as mortality and need for ICU admission, based on sensitivity, specificity and area under the ROC curve (AUC).

Results: Sensitivity and specificity (95% confidence interval in brackets) were, respectively: CURB65 – 27.3% [9.7 - 56.6] and 91.5% [86.3 - 94.9]. PSI – 81.8% [52.3 - 94.9] and 55.8% [48.1 - 63.1]. ATSm – 54.6% [28.0 – 78.7] and 95.8% [91.5 - 97.9]. SCAP – 81.8% [52.3 - 94.9] and 70.9% [63.6 - 71.3].

AUC was: CURB65 - 0.594, PSI - 0.688, ATSm - 0.752 and SCAP - 0.764.

Conclusions: PSI and SCAP were the most sensitive systems, while CURB65 and ATSm were the most specific. Although the best discriminative capacity was found in SCAP, it presented many false positives. Probably, a good approach would be to rely on clinical judgment, triage of high risk patients with PSI or SCAP and use of ATSm to determine need for ICU admission.

P2489

Value of serum procalcitonin levels in the differential diagnosis of pneumonia and pulmonary embolism

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Objective: Procalcitonin (PCT), a precursor hormone of calcitonin is secreted from the thyroid. It was increased in blood in bacterial infections. The aim of the study was to determine the serum procalcitonin levels in differentiating community-acquired pneumonia (CAP) from pulmonary embolism (PE).

Methods and patients: Fifty-eight patients with ≥ 1 of the following symptoms; fever, cough, dyspnoea, haemoptysis, sputum, chest pain and lesion on chest x ray were included to the study. Thirty patients were diagnosed as CAP and 27 patients as PE. One patient with suspected PE was excluded because of negative pulmonary CT angiography. Serum PCT values of all patients were measured and recorded before treatment was started.

Results: Median values of PCT were in patients with PE 0.05 ng/ml, in patients with CAP 1.38 ng/ml. The area under ROC curve was 0.83. With an optimal cut-off value 0.27 ng/ml for differentiating PE and CAP, sensitivity was 76.4%, specificity 85.2%, negative predictive value 76.7%, positive predictive value 85.2%, and accuracy 80.7%.

Conclusion: Serum PCT has a high diagnostic value in the differential diagnosis of PE and CAP. Serum PCT can be used in differentiating CAP and PE as an inflammatory marker.

P2490

The value of exhaled breath condensate "pH" to evaluate the severity of disease and the response to treatment in patients with community acquired pneumonia

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Introduction: There is no practical procedure in defining severity of community acquired pneumonia (CAP) and evalution of response to treatment. Recently "exhaled breath condensate pH" measurement as a noninvasive, reproducible and easily performed method is in use to diagnose some airway and pulmonary diseases. We planned this study to measure the severity and response to treatment in patients with community acquired pneumonia by using this method. **Materials and methods:** Fourty-two patients with CAP and 31 control subjects were included in this study. In the patient group blood analysis were performed for every patient on 1.,3.,7. days of treatment and chest X-rays obtained on same days to assess EBC pH. Parameters, which were significant, were evaluated between patient and control group.

Results: In patient group mean value of EBC pH on first analysis (EBC pH₁) was 7.159 \pm 0.518, while the second (EBC pH2) and third (EBC pH3) were 7.317 \pm 0.479 and 7.618 \pm 0.250, respectively. In control group mean EBC pH value was 7.886 \pm 0.280. Considering the first EBC pH assessment as cut-off value (7.74), sensitivity and specificity were obtained%97.6 and%83.9, respectively.



Figure 1 : Treatment with the rise of the EBC pH value.

Conclusion: Based on these results we claim that EBC pH may be used in assessing the severity and radiological extensiveness and in monitoring the treatment.

P2491

Cost and outcomes of pneumococcal community-acquired pneumonia among adults in the United Kingdom

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Background: Community-acquired pneumonia (CAP) is associated with substantial morbidity and mortality among adults in the United Kingdom (UK). *S. pneumoniae* is the most common cause of CAP.

Aims and objectives: The study objective was to evaluate the clinical and economic burden of pneumococcal CAP among adults in the UK.

Methods: A cost-outcomes model was developed to estimate the inpatient costs and health outcomes associated with pneumococcal CAP among adults above 50 years old in the UK. Health outcomes were measured in terms of life-year (LY) and quality-adjusted life year (QALY) lost. National data sources were used to estimate hospital admissions, deaths and costs with CAP as primary diagnosis for 2009/10. Since specific pathogens for pneumonia are not commonly identified, the proportion of CAP attributable to *S. pneumoniae* was estimated based on literature findings. A structured literature review was conducted to identify UK specific quality of life data.

Results: It was estimated that there were 58,604 annual hospital admissions for pneumococcal CAP for adults above 50 years old in UK, costing more than £122 million per year. In addition, there were 13,161 deaths per year resulting in 87,533 LYs lost. The total annual number of QALYs lost was 64,653. The disease burden was higher among older age groups with approximately 84% of pneumococcal CAP occurring in adults above 65 years.

Conclusions: Pneumococcal CAP in adults presents a substantial burden both to individuals and to the National Health Service (NHS) in the UK. The cost and outcomes of pneumococcal CAP should be incorporated into economic evaluations of adult pneumococcal vaccination strategies.

P2492

Relationship between the presence of hypoxemia and the inflammatory response measured by C-reactive protein in bacteremic pneumococcal pneumonia

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Aims: To evaluate whether the presence of hypoxemia could influence the systemic inflammatory response (C-reactive protein, CRP) in bacteremic pneumococcal pneumonia (Pn-CAP).

Material and methods: We analyzed the relationship between the presence of

hypoxemia (PaO₂/FiO₂ <300) and other clinical parameters and systemic inflammatory response measured by PCR in a series of bacteremic pneumococcal pneumonia. We performed a multiple linear regression analysis considering CRP levels as a dependent variable and other physiological parameters and comorbidities as independent variables.

Results: We analyzed 297 cases of bacteremic pneumococcal pneumonia. The mean PaO2/FiO2 was 277.7 (IQR: 233.3-323.8), and 44.8% (133) showed PaO₂/FiO₂ <300. CRP mean was 27.6 mg/dl (IQR: 15.7-39.2). Linear regression analysis showed that pneumonia severity (PSI score) (regression coefficient: -0.21, p = 0.047), PaO₂/FiO₂ (regression coefficient: -0.21, p = 0.037) and the presence of some immunosuppressant factor (regression coefficient: -0.29, p = 0.002) were independently associated with CRP levels. The model showed a correlation of 0.353 with r² of 0.125.

Conclusions: In our series, we observed that the degree of hypoxemia, the severity of pneumonia and the presence of some immunosuppressant factors correlates with the systemic inflammatory response measured by CRP in bacteremic pneumococcal pneumonia.

P2493

Usefulness of serum cortisol in assessment for the severity of community-acquired pneumonia

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Background: High cortisol levels are frequently observed in patients with severe infections and are of prognostic value in sepsis. The aim of this study was to evaluate the clinical usefulness of serum cortisol in assessment for the severity of community-acquired pneumonia (CAP).

Materials and methods: This study analyzed the results of 52 CAP subjects admitted in Changwon Fatima Hospital between July 2008 to May 2010. Total serum cortisol, infection markers such as C-reactive protein (CRP), procalcitonin (PCT) and CURB (Confusion, Uremia, Respiratory rate, Blood pressure)-65 were examined retrospectively.

Results: In clinically unstable subjects on admission day 4, baseline serum cortisol, CURB-65, and CRP were elevated significantly compared to those of stable subjects.

aboratory parameters an	d severity	scores of	the	patients	according t	to outcome
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Variables	Clinically unstable on day 4 (n=17)	Clinically stable on day 4 (n=35)	p Value
CRP, mg/dl	19.93±11.5	9.84±9.15	0.001
PCT, ng/ml	18.48 ± 28.26	4.21±11.89	0.060
WBC, 103/µl	14594.71±8718.19	12701.14±7028.5	0.404
Cortisol, µg/dl	40.38±17.46	18.76±13.47	0.000
BUN, mg/dl	37.04±21.93	27.03±18.92	0.096
CURB-65	2.47±1.5	$1.34{\pm}0.84$	0.009

Values are means \pm SD.

Area under curve (AUC) of cortisol, CRP, and CURB-65 from ROC curves were 0.847, 0.783, and 0.724 respectively. In the subjects with serum cortisol \geq 22.82 µg/dL, CRP, PCT, CURB-65 score, and mortality were significantly elevated. **Conclusion:** These findings suggest that measurement of serum cortisol in early stage may provide helpful information in the assessment of CAP severity.

P2494

Community acquired pneumonia in a Greek hospital: Adherence of Greek doctors to the IDSA/ATS and national guidelines

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Background: The adherence of Greek physicians to practice guidelines for CAP and its impact on cost and patients' outcome remain unknown.

Material & methods: We performed a prospective observational study in 252 immunocompetent hospitalized patients so as to investigate whether the 2007 IDSA/ATS and the Greek guidelines for CAP are followed by chest physicians in "Sotiria" General hospital in Athens, Greece. We: a) assessed whether the decision of hospital admission was correct or not and b) evaluated whether the treatment regimen was in accordance to guidelines. Fine score (PSI) was applied by the authors to determine the severity of CAP.

Demographic data, co-morbidities and outcome of 252 patients with CAP

Age (years), mean \pm SD	56.3±22.2 (range: 14-96)
Duration of hospitalization (days), mean \pm SD	10.9 ± 11.8
Males/Females, n (%)	157/95 (62.3/37.7)
Active Smokers, n (%)	110 (43.7)
Alcoholism, n (%)	30 (11.9)
Mortality, n (%)	31 (12.3)
With co-morbidities, n (%)	170 (67.5)

Results: The mortality rate was 12.3%. 120 (48%) patients were admitted to the hospital, despite the fact they were classified as risk class I or II. Accordance to guidelines as far as the initial antimicrobial regimen is concerned was poor (152 patients, 60%). A trend towards shorter length of hospitalization was observed in patients treated with an initial antimicrobial in accordance to guidelines compared to those receiving initial regimen in discordance to guidelines.

Conclusion: The implementation of CAP guidelines by chest physicians in the major Greek hospital for thoracic diseases is poor. Improvement of adherence may shorten the length of hospitalization and reduce the financial burden for the national health system.

P2495

Ventilator-associated pneumonia in surgical intensive care unit: Risk factors for mortality and survival period

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Objectives: The aim of this study was to reveal the prognostic factors of Ventilator-Associated Pneumonia (VAP) in the surgical ICU of Showa University Hospital in Tokyo.

Patients and methods: We reviewed 1629 cases administrated mechanical ventilation in surgical ICU from Apr,2006 to Dec,2010. In these 1629 cases, 46 patients were diagnosed VAP. We evaluated whether backgrounds, general conditions, laboratory data, chest radiographic features at the time of VAP onset and severity of VAP may contribute to the mortality or survival period.

Results: Twenty-three patients (50%) were dead. Multivariate analyses using significant (p<0.05) parameter in univariate analyses revealed different results, but bilateral pneumonia had significant differences in the both multivariate analyses of mortality and survival period (Table 1 & 2).

Table 1. Multivariate analysis of mortality in VAP patients

Factor	Odds ratio	<i>p</i> value
IROAD*	10.71	< 0.0001
Re -Operation	36.04	0.0026
Bilateral pneumonia	15.45	0.0178

Table 2. Multivariate survival analysis from Cox proportional hazard model Factor Hazard ratio p value

		1	_
APACHEI	1.098	0.0245	
Bilateral pneumonia	2.640	0.0352	
	APACHE I Bilateral pneumonia	APACHE II 1.098 Bilateral pneumonia 2.640	APACHE II 1.098 0.0245 Bilateral pneumonia 2.640 0.0352

Figure 1 shows Kaplan-Meier curves of radiographic findings and survival period.



Fig 1. Kaplan-Meyer analysis of radiographic findings in VAP patients

Conclusion: In this study, bilateral pneumonia had high mortality and was shorten survival period. We will present the other risk factors for mortality in this Annual Congress.