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238. Lower respiratory tract infection: from outbreak to prognostic tests

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Outbreak of human metapneumovirus infection in hospitalized adult patients
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Introduction: There was rare report of nosocomial outbreaks in adults, our experience of this hMPV outbreak in hospitalized adult patients in Taiwan may alert our hospital epidemiologists to consider hMPV as a nosocomial infection.

Methods and patients: This outbreak occurred in Psychiatric Ward at the Armed Forces General Hospital in Hualien, Taiwan.

The PCR products were run on a 1.5% agarose gel and stained with ethidium bromide. The amplified F and N gene nucleotides were sequenced and registered at GenBank (Accession No. DQ070846 and DQ070847, respectively).

Results: The 13 of the 52 patients (25%) became sick during this outbreak. HMPV was confirmed by RT-PCR in the throat swabs in 10 of the 13 patients (77%) by primers specific to N and F genes. The clinical features and laboratory results of the 10 patients with confirmed hMPV infections are summarized in table 1. The clinical features and x-ray findings were summarized in table 1.

Table 1. Clinical characteristics of ten patients with hMPV infection

Patient No.	Sex	Age	Fever	Cough	Dyspnea	Pneumonia	Blood culture
1	M	65	+	+	+	+	CNS
2	M	32	+	+	-	+	NG
3	M	54	+	+	-	+	NG
4	M	58	+	+	-	+	NG
5	M	83	+	+	-	+	NG
6	M	49	+	+	-	-	NG
7	M	43	-	+	-	-	NG
8	M	77	+	+	+	+	NG
9	F	26	+	+	-	-	NG
10	M	54	+	+	-	+	NG

CNS: coagulase-negative Staphylococci; NG: no growth

Discussion: Nosocomial transmission of hMPV infection has been previously documented at low frequency. Our report is the largest reported outbreak of hMPV infection in a psychiatric ward in Taiwan. Our results support the view that hMPV RTI can be acquired nosocomially in adult patients at a frequency that may be more routine than infrequent.

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Are antibiotics effective for influenza-like illness? A prospective survey at fever clinic in Beijing, China

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To evaluate the effectiveness of antibiotics in the treatment of adult patients with influenza-like illness (ILI) in Beijing, China.

Methods: A prospective, non-intervention study was conducted at fever clinic of Beijing Chaoyang Hospital. Throat specimens were sent for bacterial and viral evaluation. Demographic characteristics, influenza vaccine and symptoms were also collected for analysis. Antibiotics and antiviral therapy were recorded. Follow-up interview was made until recovery of symptoms.

Results: A total of 476 cases were enrolled between Dec 2006 and April 2007, of which 454 cases were used for final analysis. Influenza virus was the most common

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pathogen(n=197, 43.4%), followed by *Haemophilus influenzae* (n=8), *Klebsiella pneumoniae* (n=4), adenovirus (n=2), *Staphylococcus aureus* (n=2), beta-hemolytic *Streptococcus spp* (n=2), RSV (n=1), rhinovirus (n=1). The average age was 33, and the ratio of male to female was 1.1:1. The influenza vaccine ratio was only 5.29%, vaccinated individuals include 23(5.18%) of patients aged 18-64 years and 1(10%) of patients aged ≥ 65 years. Rate of antibiotic prescription after onset of illness was 63.4%, but none received antiviral drugs such as Oseltamivir and amantadine. The cost of antibiotic treated patients was twice as much as non-antibiotic treated patients (P=0.012), but the defervescence time, symptoms alleviation time and rate of secondary visits did not differ.

Conclusion: Influenza virus was the most common pathogen for adult patients with ILI in Beijing city during winter and spring seasons. Antibiotic treatment did not affect resolution of nonspecific ILI, but cost much more.

P2225

Detection of RSV antigens in non-presenting in adult lung cells

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RSV is an extraordinarily successful respiratory virus causing annual epidemics of respiratory disease worldwide. Though re-infection is common, its greatest impact is in the very young and elderly and those with chronic obstructive airways disease (COPD). RSV related infection is the commonest cause for hospitalisation in infants. In temperate climates epidemic commence in late autumn/early winter rising rapidly to a peak and then falling away by late spring. Isolation of the virus in summer is uncommon but has been described in patients with COPD in whom the virus was identified as commonly in summer as in winter. Current studies aim to identify a mechanism by which the virus is able to remain practically dormant during the summer months and whether there is an endogenous or exogenous trigger for the resurgence in winter months. Our previous studies demonstrated that nitric oxide and nitric oxide donors can trigger viral replication in dendritic cells that had been previously infected with RSV but where no viral replication evident.

The aim of this study was to determine if RSV can be detected in adult lung cells. Heterogeneous populations of lung cells were isolated from adult lung tissue by homogenisation and cultured for 7-14 days in media optimised for macrophage and dendritic cell growth. Cells were fix/permeabilised, stained with RSV primary and RPE secondary antibodies and analysed by flow cytometry.

The results from this study demonstrate that RSV is present in non-presenting adults during summer non-epidemic months. Suggesting that RSV may lay dormant in lung cells during summer months and be triggered by exogenous factors, for example conditions seen with COPD patients or nitric oxide exposure.

P2226

Spectrum of bacterial and viral pathogens of infectious exacerbation of COPD

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Bacteriological investigations of sputum, bronchial washes and virologic investigations of swabs from nasal cavity and nasopharynx were conducted in 126 patients with the infectious exacerbation of COPD. The diagnostic of bacterial infection was conducted by the classic bacteriological method. Viral diagnostic was carried out by the traditional methods of virologic diagnostic and also were applied express-methods of viruses and viral antigens indication, in particular, enzyme immunoassay (EIA), fluorescent antibodies method (FA) and simple/quick tests, based on immunochromatographic assay (ICA). According to estimations, the infectious exacerbation of COPD was caused only by bacterial agents in 68,2% patients, in 15,9% – only by viruses and in 15,9% – by their combination. Among bacterial agents *H. influenzae* was identified in 49.1% cases, *S. pneumoniae* – in 22.6%, *M. catarrhalis* – in 13.2%, *Kl. pneumoniae* – in 9.4%, *S. aureus* – in 7.6% and *E. coli* – in 6.6%. These microorganisms were resistant to natural penicillins and aminopenicillins in 6-87% cases and to chloramphenicol – in 6-50%. Influenza A (H1N1, H3N2) and B viruses were isolated in 37.5% patients with infectious exacerbation of COPD, respiratory adenoviruses – in 30.0%, parainfluenza viruses – in 25.0% and respiratory syncytial virus – in 7.5%. The influenza viruses express-diagnostic method (EIA and simple/quick tests, based on ICA) have the same high informativeness, but simple/quick tests have an advantage over the others virologic diagnostic methods by their simplicity and speed of conduction.

P2227

Respiratory viruses in the upper airways in non-allergic late-onset asthma

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78 patients with non-allergic late-onset asthma (mean age 54 \pm 7.9) have been evaluated to assess the respiratory viruses in epithelial cells from rhinopharyngeal mucosa by culture and method of direct immunofluorescence. An increase in specific antibodies in blood sera was determined by immunoenzymatic analysis and conventional serologic reactions. Patients were admitted to hospital with exacerbations of disease (uncontrolled asthma) and have followed 4-5 weeks later (partly controlled asthma). Respiratory viruses were determined in 50 patients (64.1%) with uncontrolled asthma. 14 patients (18%) demonstrated positive samples for respiratory viruses at follow-up. Results are presented in the table.

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Respiratory viruses in the upper airways in non-allergic late-onset asthma

	Asthma exacerbation (uncontrolled asthma)		4-5 weeks later (partly controlled asthma)		p
	n	%	n	%	
Influenza A viruses	9	11,5	1	1,3	
Parainfluenza viruses	7	9,0	2	2,6	
Adenoviruses	18	23,1	7	8,9	<0,05
Respiratory syncytial viruses	12	15,4	3	3,9	
Herpes simplex virus type 1	4	5,1	1	1,3	
All	50	64,1	14	18	<0,05

10 from 14 patients (71,4%) with respiratory viruses in the upper airways at follow-up had chronic sinusitis and nasal polyps. Probably persistence of respiratory viruses may be a risk factor for nasal polyps and exacerbation of asthma.

P2228

Role of respiratory infection in exacerbations of atopic asthma

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The importance of viral infections in the induction and exacerbation of atopic asthma and poor control is well established, but the role of bacterial pathogens is not completely understood.

Aim: We aimed to evaluate the role of bacterial pathogens in asthma exacerbations.

Methods: We studied 31 patients (age of 50,4 \pm 13,4 years) with atopic moderate asthma treated with inhaled steroids (1000 μ g/day of beclomethasone). All patients had inadequate disease control (< 4 hospitalizations/year).

We measured specific serum antibodies to *Chlamydia pneumoniae*, *Mycoplasma pneumoniae* with commercially available ELISA kits. The polymerase chain reaction (PCR) and cultural methods were used to detect pathogens in the sputum.

Results: The positive IgG titers to *C. pneumoniae* were detected in 23 (74,1%), to *M. pneumoniae* in 14 (45,1%) patients. Positive IgM levels to *C. pneumoniae* was detected in 1 subject (3,2%), to *M. pneumoniae* in 4 (12,9%) patients. Pathogens were detected in sputum by PCR more frequently than with cultural methods *Streptococcus pneumoniae* [20(64,2%) vs 10(32,2%) respectively, p<0.05], *Haemophilus influenzae* [8 (25,8%) vs 4(12,9%) respectively, p<0.05], *Klebsiella pneumoniae* [4(12,9%) vs 1(3,2%) respectively, p<0.05].

Conclusion: Respiratory infections play an important role in atopic asthma exacerbations and inadequate disease control.

P2229

Chlamydia pneumoniae and mycoplasma pneumoniae infection of airways and exacerbations of bronchoobstructive diseases

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The aim of this study was to assess the frequency of *Chlamydia* and *Mycoplasma pneumoniae* infection in patients with bronchoobstructive diseases by means of direct immunofluorescence and to evaluate its influence on exacerbations. **We examined 96 patients:** 31 with asthma, 39 with COPD and 26 with chronic bronchitis. Examination included bronchoscopy with detection of *C.* and *M. pneumoniae* in biopsates of bronchial epithelium by means of direct immunofluorescence.

"Atypical" bacteria were detected in 96 patients: *C. pneumoniae* – in 28,1%, *M. pneumoniae* – in 20,8%, association of *C.* and *M. pneumoniae* – 9,4% cases. Mentioned infection was found in 20% patients with rare exacerbations (1 time a year and less) and in 64,0% patients with frequent exacerbations (more than 2 times a year), the difference was significant (p<0,05).

Conclusion: *Chlamydia* and *Mycoplasma pneumoniae* were detected in patients with frequent exacerbations of bronchoobstructive diseases in 3 times more often, than in patients with rare exacerbations. It may be said about the role of "Atypical" bacteria in the exacerbation of bronchoobstructive diseases.

P2230

Chlamydia pneumoniae and mycoplasma pneumoniae infection of airways in patients with bronchoobstructive diseases

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The aim of this study was to assess the influence of *Chlamydia pneumoniae* (*Cp*) and *Mycoplasma pneumoniae* (*Mp*) infection of airways on the severity of

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airflow limitation. We examined 96 patients: 31 with asthma, 39 with COPD and 26 with chronic bronchitis. Examination included spirometry and detection of Cp and Mp in bioplates of bronchial epithelium by means of direct immunofluorescence. Cp was detected in 27 (28,1%), Mp – in 20 (20,8%), association of Cp and Mp – in 9 (9,4%) patients. All patients received inhaled bronchodilators and glucocorticosteroids. Patients with Cp and Mp infection were divided into 2 groups – with antibacterial therapy by macrolides during 10 days (group 1) and without it (group 2). Changes of FEV1 were more significant in group 1 compared with group 2 (asthma: from $68,8 \pm 7,9\%$ to $81,7 \pm 6,1\%$ ($p < 0,05$) vs. $69,6 \pm 9,6\%$ to $78,0 \pm 7,4\%$ ($p > 0,05$); COPD: from $68,1 \pm 6,1\%$ to $82,4 \pm 7,7\%$ ($p < 0,05$) vs. $66,1 \pm 5,0\%$ to $72,4 \pm 5,5\%$ ($p < 0,05$))

Conclusion: C. and M. pneumoniae were detected at brush-biopsy material in 58,3% patients with bronchoobstructive diseases. Treatment with macrolides improved the results of bronchodilator and antiinflammatory therapy.

P2231

Comparison of two enzyme linked immunosorbent assays for diagnosis of Chlamydia pneumoniae infection

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Background: *Chlamydia pneumoniae* is a gram negative bacterial pathogen that causes a wide spectrum of clinical manifestations, mainly upper and lower respiratory tract infections.

Objectives: The comparison of commercial enzyme linked immunosorbent assays (ELISA) from two different manufacturers for detection of *Chlamydia pneumoniae* IgA and IgG, respectively

Materials and Methods: A total of 80 serum samples from patients with symptoms compatible to a *Chlamydia pneumoniae* infection were tested with all 4 assays, namely the SeroCP Quant IgA and SeroCP Quant IgG Savyon diagnostics (Savyondiagnosics Ltd., Ashdod, Israel) and the Chlamydia pneumoniae IgA ELISA plus medac and Chlamydia pneumoniae IgG ELISA plus medac (medac, Hamburg, Germany)

Results: 48 samples (57,5%) were tested positive and 10 samples (12,5%) were tested negative for IgA and IgG by all 4 assays. 8 samples (10%) were tested negative for IgA and IgG with the Savyon ELISAs and negative for IgA but positive for IgG with the medac ELISAs. 4 samples (5%) were tested negative for IgA and IgG with the Savyon ELISAs and negative for IgA but borderline for IgG with the medac ELISAs. 10 samples (12,5%) were tested negative for IgA and positive for IgG as well with the Savyon ELISAs as with the medac ELISAs. One sample (1,25%) was tested IgA positive with the Savyon assay and IgA negative with the medac assay and IgG negative by both tests, one sample (1,25%) was tested IgA borderline with the medac assay and IgA negative with the Savyon assay with positive IgG by both tests.

Conclusion: Results obtained by both ELISAs were found to be comparable, although IgG was detected more often by the medac ELISA.

P2232

Assessment of the treatment of ambulatory patients with respiratory infections

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Introduction: The excessive use of antibiotics for common outpatient respiratory infections leads to emergence of antibiotic resistant bacteria and higher costs for treatment.

Aim: to estimate the ambulatory treatment in patients with respiratory infections (acute respiratory viral infections, acute bronchitis and community acquired pneumonia, CAP).

Methods: 524 patients from 5 districts in Pleven (37,2% men, 62,8% women, average age 38,8 years) have been observed during one- year period. 65,3% of them were with acute respiratory viral infections, 27,9% – with acute bronchitis and 6,8% – with CAP.

Results: investigations (x-ray, haematological tests etc.) were made in 6,5% of the cases with acute respiratory viral infections, 66,4% – in acute bronchitis and 100% in CAP. Antibiotics were prescribed in 73,1% of all patients. 64,6% of patients with viral infections, 89,7% of those with acute bronchitis and 86,1% of group with CAP were treated by general practitioners with antibiotics. The most frequent prescriptions were: Beta lactams – in 56,6% of patients, macrolides (30,8%) and tetracyclines (7%). Nonspecific symptomatic treatment was prescribed in 96,2% of the cases. The ratio antibiotic/symptomatic treatment is 0,76. Only 6,8% of patients with acute bronchitis and 13,8% – with CAP were referred to pulmonologist.

Conclusions: Oral antibiotic treatment in patients with acute viral respiratory infections and acute bronchitis prevails. Patients referred to pulmonologist are few. There is necessity to estimate precisely antibiotic treatment of these patients in ambulatory practice.

P2233

Initial hospital management of community acquired pneumonia on the Isle of Man

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Aim: To compare current practice with 2004 Updated BTS guidelines on Community Acquired Pneumonia (CAP) with emphasis on initial severity assessment using CURB-65 score and use of initial empirical antibiotics.

Method: Retrospective study; 50 patients admitted over 2-year period; Parameters examined: documentation of CURB scores, appropriateness of admission based on score, initial investigations, empirical antibiotic therapy & outcome.

Findings: No patients had a documented CURB score. Only 42% (5/12) of hypoxic patients ($\text{SaO}_2 < 92\%$) had arterial blood gases taken. In only 42% (21/50) of patients were blood cultures sent prior to first dose of antibiotic. Following is the distribution of patients based on CURB score and antibiotic therapy given: CURB 4/5 (3/50): All patients were treated inappropriately with monotherapy (IV Cefuroxime) of which 2 died.

CURB 2/3 (24/50): 25% (6/24) were treated appropriately with combination of amoxicillin and macrolide, 46% (11/24) were treated with Cephalosporins and macrolide and 29% (7/24) were given monotherapy only.

CURB 0/1 (23/50): 39% (9/23) were treated appropriately with oral monotherapy, 8% (2/23) received IV monotherapy and 53% (12/23) were treated inappropriately with combination of IV antibiotics in hospital. Hence, a total of 38% (19/50) admissions were classed as inappropriate based on the CURB scores. 18% (9/50) of all patients died.

Conclusions: There was a major shortfall in the use of CURB scores in evaluation of CAP patients leading to both a high rate of inappropriate admissions (38%) as well as a high death rate (18%). Use of blood gases and cultures was unsatisfactory. Initial empirical antibiotic use not consistent or in keeping with the guidelines.

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Community acquired pneumonia in patients with neuromuscular disorders. Severity assessment and outcome

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Aim: The aim of the study was to estimate severity of community-acquired pneumonia (CAP) in patients with neuromuscular disorders. We analyzed 17 patients with neuromuscular disorders treated at Institute for pulmonary diseases and TB at Intensive care unit (ICU) during 2007. Neuromuscular disorders in observed group included one of next disorders: amyotrophic lateral sclerosis, muscular dystrophy, myasthenia gravis and spinal muscular atrophy. Clinical examination, blood tests, blood gas analysis were done in all patients. Fine's score was calculated in all patients and admission.

Results: In observed group there were 9 (52,9%) men and 8 (47,1%) women with mean age 44 ± 5 years. Out of 17 patients, 10 (58,8%) had CAP, there were 5 (50%) men and 5 (50%) women. 6 (60%) patients were in risk class III, 4 (40%) patients were in risk class IV. No one was ranked in risk class I, II and V. 8 (80%) patients had unilateral, 2 (20%) patients had bilateral infiltrates. No one had pleural effusion. Respiratory failure was present in all patients and treatment required noninvasive positive pressure ventilation (NIPPV). Two patients in terminal phase required mechanical ventilation (MV). Out of 10 patients with CAP, 5 (50%) patients died. 3 (60%) of them were ranked in risk class IV, 2 (40%) were ranked in risk class III.

Patients with CAP

Outcome	III risk class	IV risk class	Summary
lethal	2	3	5
cured	4	1	5
summary	6	4	10

Conclusions: In course of neuromuscular disorders, respiratory failure and respiratory infections are very common and serious complications. Those patients present with severe pneumonia and they require treatment in ICU and often NIPPV and MV. CAP in patients with neuromuscular disorders are highly associated with lethal outcome.

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Community-acquired pneumonia due to Streptococcus pneumoniae in hospitalized patients – mortality predictors

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Background: In the management of Community-Acquired Pneumonia (CAP), the decision to where to treat the patient is probably the most important decision.

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Aim: Avaluation of mortality risk factors in admitted patients.

Material and Methods: Patients with CAP due to *Streptococcus pneumoniae* admitted in our hospital between 1st January and 31st December 2006 were retrospectively analysed. Samples of blood, sputum, bronchial and bronchoalveolar lavage and urine were collected for microbiological testing by standard cultures techniques and urine antigen detection. Scoring systems tools PSI (Pneumonia Severity Index) and British Thoracic Society (BTS) – CURB-65 were evaluated. The statistical treatment was done in SPSS 14.0 program.

Results: We included 104 patients, 67.3% male. The median age was 63 years. Average length of stay was 13 days. Eleven patients had pleural effusion and 2 with pleural empiema. The timing of antibiotic administration was in the first hours. First empirical antibiotic choice was ceftriaxone plus azithomicine. Eleven patients (25.6%) were intubated and invasively ventilated. The mortality was 13.4%. There was a significant association between PSI and CURB-65 score and mortality and requirement of invasive ventilation.

Conclusion: CAP is an important health problem with an high mortality. This study confirms the value of PSI and CURB-65 to predict severe pneumonia.

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Management of community acquired pneumonia

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Introduction: The annual incidence of community-acquired pneumonia is 5-11 per 1000 adult population. The illness results in about 83,000 hospital admissions each year and is the fifth leading cause of death in the UK

Aim: To assess the compliance of Community acquired pneumonia management with the BTS Guidelines with special regards to severity assessment, appropriate investigation, management of co-morbidities and complication, appropriate antibiotics, final discharge plan and follow up.

Methodology: We conducted two retrospective studies who were admitted with primary diagnosis of pneumonia in East Lancashire NHS Trust. The first study was audited between March and September 2006. The reaudit and closing of the loop was done on 2007 between March and September respectively.

Results: In the first study it was found that 30% of patients were over 80 years of age. The average and mean duration of illness before hospital admission was 11 and 6 days respectively. The average and median length of stay is 6.9 and 5 days respectively. About 40% patients had combination of co-amoxiclav and clarithromycin. 82% patients were discharged home and follow up arranged in 40% patients.

In the second retrospective study most of the parameters like age group affected, mode of admission and duration of illness before hospital admission were almost the same. CURB -65 was documented in 34%. In most of the patients the organisms were found to be streptococcus pneumonia, staphylococcal species and H.influenza. 36% were treated for severe and 63% for non-severe community acquired pneumonia.

Conclusions: Clinical excellence in the Management of community acquired pneumonia could be achieved only when the recommendations of the national guidelines are followed.

P2238

Monotherapy with β -lactamic antibiotics or macrolides vs their combination for the treatment of community acquired pneumonia (CAP)

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Introduction: In spite of the guidelines suggesting a combination of a β -lactamic antibiotic and a macrolide for the treatment of CAP, doctors often prescribe a monotherapy consisting of either of the antibiotics mentioned above.

Objective: Our aim was to investigate the factors influencing the selection of a monotherapy or a combination regimen for hospitalized patients with CAP and the potential impact of each regimen on outcomes such as length of hospital stay, time to apyrexia and time to radiology improvement.

Patients and Methods: From our data base, we retrieved data for 99 CAP patients (58 men, 41 women, median age=60 years, range=17-93). 50 patients were treated by a combination of a β -lactamic and a macrolide (Group 1) and 49 patients by a monotherapy with either a β -lactamic or a macrolide (Group 2).

Results: There was no statistically significant difference between the groups in terms of the chest x-ray findings (extension of infiltrates and presence of a pleural effusion), the severity of the disease (assessed by the Pneumonia Severity Index score) and the temperature on admission. Patients started on monotherapy were slightly older than those in Group 1 but the difference was not statistically significant (p=0.149). There was a tendency for an elevated white blood cells count in Group 1 (p=0.069). Duration of hospitalization, time to apyrexia and time to radiological improvement and complete resolution were not statistically significant between the two groups.

Conclusions: None of the factors studied had any impact on the selection of the above therapeutic regimens. Outcomes were similarly distributed among the two therapeutic groups.

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Immunglobulin G antibodies to pneumococcal surface protein A (PspA) families in serum of adults with pneumococcal community-acquired pneumonia in China

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Background: *Streptococcus pneumoniae* remains an important cause of community-acquired pneumonia (CAP). PspA, as the promising protein candidate, has highly variable and is divided into three families. But few data is known of the natural development and distribution of antibodies to PspA families in adults with pneumococcal CAP in China.

Objective: We evaluated antibodies to PspA families in serum of adults and the role in CAP for expanding our knowledge for a potential PspA protein-based vaccine in China.

Method: Serum (acute and convalescent) levels of IgG antibodies to PspA families were measured by use of enzyme immunoassay from 42 adults hospitalized with pneumococcal CAP, from an ongoing pneumococcal CAP surveillance study in China, and two groups of age-matched controls (group 1, 38 patients with non-pneumococcal CAP and group 2, 40 patients hospitalized for non infectious conditions).

Results: We found pneumococcal CAP elicited a significant increase in convalescent sera antibody levels to PspA than in acute sera (P<0.001), and no such increases were found in other two groups. Major antibodies to PspA families at adults hospitalized with pneumococcal CAP were anti-PspA families 1 (52.4%) and anti-PspA families 2(42.9%), and were consisted with prior culture-confirmed pneumococcal families exposure.

Conclusion: The results support the previous findings that natural IgG antibodies to PspA were protective antibodies against pneumococcal CAP, and strengthen the idea that the use of PspA basic-protein vaccine should containing the major two families (families 1 and 2) for eliciting broadly cross-protection against pneumococcal CAP.

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Penicillin-resistant *Streptococcus pneumoniae* is a rare etiology of community-acquired pneumonia requiring hospitalization: results from the CAPO international cohort study

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Introduction: *Streptococcus pneumoniae* is a major cause of community-acquired pneumonia (CAP). The results of an antimicrobial surveillance study demonstrates that the prevalence of penicillin-resistant *S. pneumoniae* (PRSP) with MIC more than 2 μ g/mL in the United States was 12% in 1997. However, there is little recent information on penicillin-resistant and multidrug-resistant (MDR) pneumococci incidence in CAP patients. The objective of this study was to determine the incidence of PRSP and multidrug-resistant pneumococci in hospitalized patients with CAP.

Materials and Methods: A secondary analysis of the CAPO database was performed. CAP was defined according to IDSA/ATS guidelines. PRSP isolates were defined as resistant isolates with a MIC \geq 2.0 μ g/mL according to Standard National Committee for Clinical Laboratory Standards (NCCLS) criteria. MDR was defined as simultaneous resistance to at least three different antibiotic classes.

Results: Among 2287 patient admitted with CAP, 197 (8.6%) cases were diagnosed as pneumococcal CAP. Eighty six (43.7%) strains were isolated from blood, and 74 (37.6%) from respiratory specimens. Mean age \pm SD was 59 \pm 16.6 years (22-92). Sixty six (33.5%) were female. PRSP was diagnosed in seven (5%) and of these, 4 (3%) were MDR-pneumococci.

Conclusions: This study shows that PRSP and MDR-pneumococci are rare causes of CAP in the majority of North America and a significant portion of Europe; therefore, most *S. pneumoniae* CAP patients can be safely treated with penicillin.

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Penicillin-resistance in *Streptococcus pneumoniae* isolates among adults with community-acquired pneumonia in the region of Tarragona, Spain

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Introduction: Antimicrobial resistances have increased in the latest years

Objective: To assess current levels of penicillinresistance among *Streptococcus pneumoniae* causing community-acquired pneumonia in middle age and older adults.

Methods: Antimicrobial susceptibility to penicillin was tested for 89 isolates of *Streptococcus pneumoniae* recovered from patients \geq 50 years with radiographically confirmed pneumonia in Tarragona, Spain, between 2002-2007. According to the minimum inhibitory concentration (MIC) of penicillin, strains were classified

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as penicillin-susceptible (MIC ≤ 0.06 mg/l) or penicillin-resistant (intermediate resistance when MIC 0.12-1 mg/l and high resistance when MIC ≥ 2 mg/l). Penicillin-resistance was determined for early cases (2002-2004) and contemporary cases (2005-2007).

Results: Of the total 89 patients, 61 (68.5%) were bacteremic pneumonias and 28 (31.5%) were nonbacteremic pneumonias. Overall, 25 (28.1%) were penicillin-resistant strains (17 with intermediate resistance and 8 with high resistance).

The proportion of penicillin-resistance was higher in early strains than in contemporary strains (39.5% vs 19.6%, $p=0.068$)

Penicillin resistance was substantially higher among *S. pneumoniae* recovered from sputum cultures than in blood cultures (39.3% vs 22.9%; $p=0.181$)

Overall mortality rate was 15.7% (17.2% in penicillin susceptible strain vs 12% in penicillin-resistant).

Conclusions: The rate of resistance to penicillin among *S. pneumoniae* that cause community-acquired pneumonia in older adults remains high, but such resistance does not result in increased morbidity.

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Therapeutic regimens in community acquired pneumonia (CAP): association with patients characteristics and outcomes

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Objective: Our aim was to investigate retrospectively the differences between hospitalized patients with CAP administered a β -lactamic – macrolide combination and those administered a fluoroquinolone and to explore the impact of those therapeutic choices on outcome.

Patients and Methods: Among 179 patients hospitalized for CAP in our clinic for the last five years, we identified 74 who were treated by either a combination or a fluoroquinolone (47 men, 27 women, mean age=56 years, ± 19.86). 46 (62%) of those were started on a β -lactamic – macrolide combination (Group 1) and 28 (38%) on a fluoroquinolone (Group 2).

Results: A shift from the combination regimen to the fluoroquinolone one was necessary because of treatment failure for 7 out of 179 patients and because of an adverse event in 1 case. There were no statistically significant differences between Group 1 and Group 2 in terms of age, white blood cell and absolute neutrophil counts, fever, Pneumonia Severity Index (PSI) and CURB65 scores on admission. The two groups were similar concerning sex and extension of the lesions on chest radiography. As to the outcome, there was no statistically significant difference in length of stay in hospital and time to apyrexia between the two groups. No death events were observed.

Conclusions: Among the factors studied, none proved to be significant for initial treatment decision making. Outcomes of both regimens studied are comparable. Small sample size must be taken into consideration for results interpretation, particularly concerning mortality.