

# Original Article

## Assessment of treatment outcome of patients with pneumonia

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### ABSTRACT:

**Background:** Pneumonia is an infection of alveoli, distal airways, and interstitia of the lungs. The present study was conducted to assess treatment outcome of patients with pneumonia. **Materials & Methods:** 85 patients of community acquired pneumonia (CAP) of both genders were enrolled patients. Ceftriaxone, Cotrimoxazole, Crystalline penicillin, gentamicin and chloramphenicol were used in management. **Results:** Out of 85 patients, males were 52 and females were 33. Mental status was altered in 14 and oriented in 71. Respiratory rate (breaths/min) <30 was seen in 5 and >30 in 80. Blood pressure (mm Hg) >90/60 was seen in 7 and <90/60 in 78. BUN (mmol/L) >7 was seen in 35 and <7 in 50. Age (years) >65 was seen among 13 and <65 in 72. The difference was significant (P < 0.05). Patients who were given ceftriaxone, 64% survived and 36% died. In cotrimoxazole, 76% survived and 24% died. In crystalline penicillin, 88% survived and 12% died. In crystalline penicillin+ chloramphenicol, 95% survived and 5% died. In Crystalline penicillin+ gentamicin, 2% survived and 98% died. The difference was significant (P < 0.05). **Conclusion:** Maximum mortality rate was seen among those managed with combination of crystalline penicillin+ gentamicin.

**Key words:** Ceftriaxone, Cotrimoxazole, Pneumonia

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**This article may be cited as:** Reddy MCS. Assessment of treatment outcome of patients with pneumonia. J Adv Med Dent Scie Res 2014;2(3):309-312.

### INTRODUCTION

Pneumonia is an infection of alveoli, distal airways, and interstitia of the lungs. It is manifested by a constellation of symptoms and signs in combination with at least 1 opacity on a chest radiograph. Pneumonia can be broadly categorized as community-acquired pneumonia (CAP) or hospital-acquired pneumonia.<sup>1</sup> There are more than 100 documented microbial causes of CAP, mainly bacteria, fungi, viruses, and parasites. The 5 most common causes of CAP are Streptococcus pneumoniae, Mycoplasma pneumoniae, Chlamydia pneumoniae, Haemophilus influenzae, and influenza viruses. Streptococcus pneumoniae is the most common cause worldwide.<sup>2</sup>

A combination of clinical history, physical examination and/or laboratory tests help in diagnosis of Pneumonia.<sup>7</sup> The supposed gold standard tool for diagnosing pneumonia is a chest X-ray (CXR) which can distinguish pneumonia from other respiratory tract infections.<sup>3</sup> Other diagnostic tests such as laboratory tests (white blood cell count (WBC), erythrocyte sedimentation rate (ESR), C-reactive protein (CRP), procalcitonin), blood culture, serology, and computed tomography scan (CT scan) have been reported with different rates of accuracy.

The optimal duration of antibiotic treatment for CAP has received little formal study, with recommendations ranging between 5 to 14 days.<sup>4</sup> Patients on parenteral therapy may be switched to oral therapy when afebrile and demonstrate improvement in coughing, dyspnea, and hemoptysis.<sup>5</sup> The present study was conducted to assess treatment outcome of patients with pneumonia.

### MATERIALS & METHODS

The present study comprised of 85 patients of community acquired pneumonia (CAP) of both genders. The consent was obtained from all enrolled patients.

Data such as name, age, gender etc. was recorded. Sociodemographic variables, duration of complaints, vital signs at presentation, presence of comorbidities, retroviral infection status, duration of hospital stay, antibiotic use, status at discharge etc. was recorded. Ceftriaxone, Cotrimoxazole, Crystalline penicillin, gentamicin and chloramphenicol were used in management. Results thus obtained were analysed statistically. P value < 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Total- 85		
Gender	Males	Females
Number	52	33

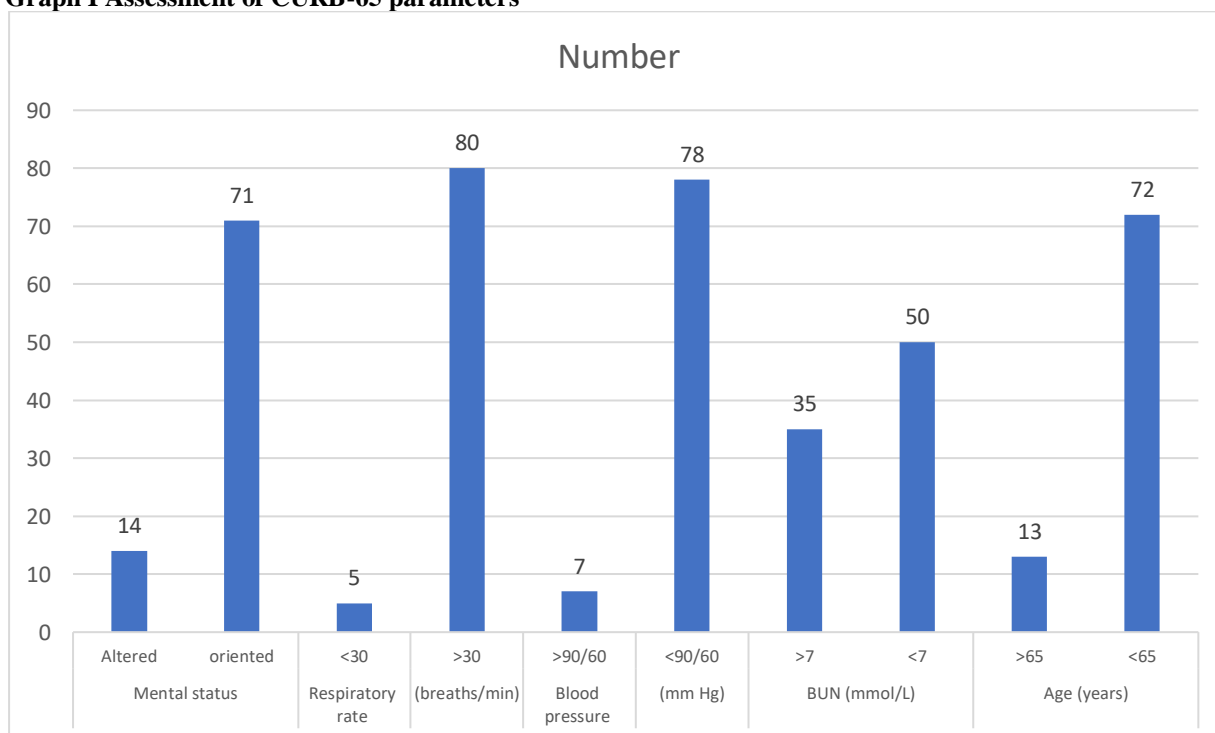
Table I shows that out of 85 patients, males were 52 and females were 33.

**Table II Assessment of CURB-65 parameters**

Parameters	Variables	Number	P value
Mental status	Altered	14	0.02
	oriented	71	
Respiratory rate (breaths/min)	<30	5	0.01
	>30	80	
Blood pressure (mm Hg)	>90/60	7	0.01
	<90/60	78	
BUN (mmol/L)	>7	35	0.05
	<7	50	
Age (years)	>65	13	0.02
	<65	72	

Table II, graph I shows that mental status was altered in 14 and oriented in 71. Respiratory rate (breaths/min)<30 was seen in 5 and >30 in 80. Blood pressure (mm Hg)>90/60 was seen in 7 and <90/60 in 78. BUN (mmol/L)>7 was seen in 35 and <7 in 50. Age (years)>65 was seen among 13 and <65 in 72. The difference was significant (P< 0.05).

**Graph I Assessment of CURB-65 parameters**



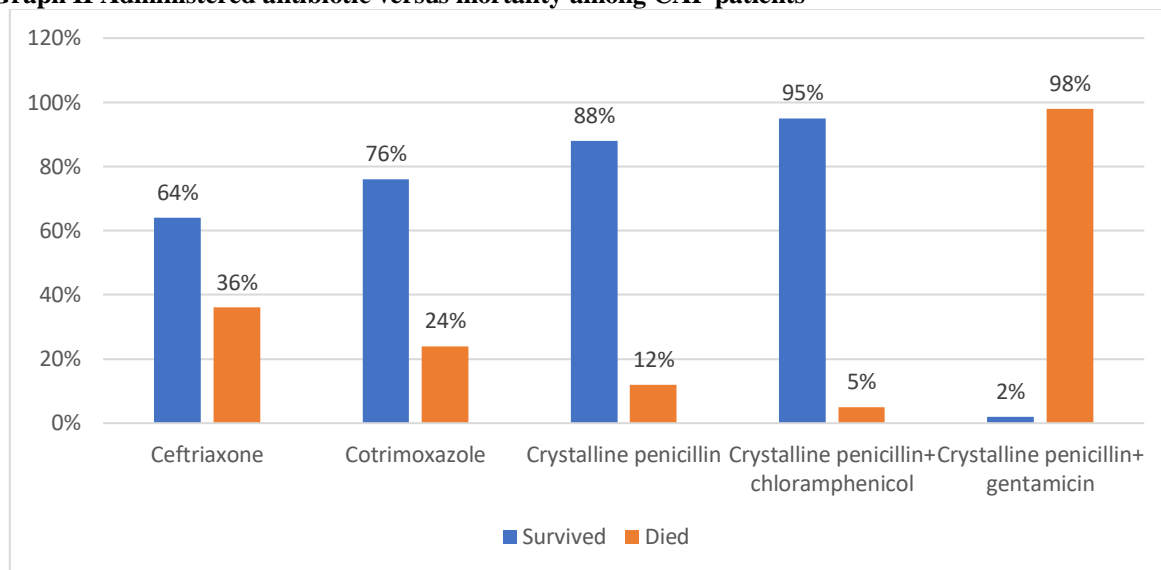
**Table III Administered antibiotic versus mortality among CAP patients**

Antibiotics	Survived	Died	P value
Ceftriaxone	64%	36%	0.03
Cotrimoxazole	76%	24%	0.02
Crystalline penicillin	88%	12%	0.01
Crystalline penicillin+ chloramphenicol	95%	5%	0.01
Crystalline penicillin+ gentamicin	2%	98%	0.01

Table III, graph II shows that patients who were given ceftriaxone, 64% survived and 36% died. In cotrimoxazole, 76% survived and 24% died. Incrystalline penicillin, 88% survived and 12% died. Incrystalline

penicillin+ chloramphenicol, 95% survived and 5% died. In Crystalline penicillin+ gentamicin, 2% survived and 98% died. The difference was significant ( $P < 0.05$ ).

**Graph II Administered antibiotic versus mortality among CAP patients**



## DISCUSSION

Lower respiratory tract infections continue to be a major health problem despite advances in the identification of etiological agents and the availability of potent new drugs.<sup>6</sup> Health care costs from pneumonia are also staggering. It is 20 times more costly to treat pneumonia on an inpatient basis as compared to outpatient treatment.<sup>7</sup> Additionally, CAP affects 5 to 10 million adults per year in the US and results in around 1 million hospitalizations. Around 20% of cases require inpatient treatment.<sup>8,9</sup> The present study was conducted to assess treatment outcome of patients with pneumonia. We found that out of 85 patients, males were 52 and females were 33. Hoe et al<sup>10</sup> evaluated the outcome of these low-risk CAP patients. Low-risk patients were identified, and their hospital outcomes were compared with the other patients. There were 155 CAP patients (69 females and 86 males). The age was 56.6 +/- 22.2 years, ranging from 12 to 93 years old. The average hospital stay was 8.4 +/- 11 days. Mortality was 12.9%. There were 37 (24%) low-risk CAP patients, and there was no mortality in this group. No low-risk patient required mechanical ventilation. They had a significantly shorter hospital stay compared with high-risk patients. An identifiable organism was found in 27% of the low-risk CAP with only one patient having a positive blood culture. The average hospitalization charge for low-risk CAP patients was, as expected, significantly lower than for the high-risk patients, and was 11.9% of the total cost for hospitalized CAP patients.

We found that mental status was altered in 14 and oriented in 71. Respiratory rate (breaths/min) <30 was seen in 5 and >30 in 80. Blood pressure (mm Hg) >90/60 was seen in 7 and <90/60 in 78. BUN (mmol/L) >7 was seen in 35 and <7 in 50. Age

(years) >65 was seen among 13 and <65 in 72. Feagan et al<sup>11</sup> enrolled a total of 858 eligible patients of CAP; their mean age was 69.4 years. The overall median LOS was 7.0 days; the median LOS ranged from 5.0 to 9.0 days across hospitals (IQR 6.0–7.8 days). Only 22% of the variability in LOS could be explained by known factors (disease severity 12%; presence of chronic obstructive lung disease or bacterial cause for the pneumonia 2%; hospital site 7%). The overall 30-day mortality was 14.1% (95% confidence interval [CI] 11.8%–16.6%); 13.6% of the patients were admitted to an intensive care unit. The median duration of intravenous antibiotic therapy was 5 days (range 3.0–6.5 days across hospitals). Although 79.8% of patients received treatment according to clinical practice guidelines, the rate of compliance with the guidelines ranged from 47.9% to 100% across hospitals.

Patients who were given ceftriaxone, 64% survived and 36% died. In cotrimoxazole, 76% survived and 24% died. In crystalline penicillin, 88% survived and 12% died. In crystalline penicillin+ chloramphenicol, 95% survived and 5% died. In Crystalline penicillin+ gentamicin, 2% survived and 98% died. Fine et al<sup>12</sup> in their study on CAP patients found that there were no significant differences in mortality. Mortality ranged from 0.1 to 0.4 percent for class I patients ( $P=0.22$ ), from 0.6 to 0.7 percent for class II ( $P=0.67$ ), and from 0.9 to 2.8 percent for class III ( $P=0.12$ ). Among the 1575 patients in the three lowest risk classes in the Pneumonia PORT cohort, there were only seven deaths, of which only four were pneumonia-related. The risk class was significantly associated with the risk of subsequent hospitalization among those treated as outpatients and with the use of intensive care and the number of days in the hospital among inpatients.

## CONCLUSION

Authors found that maximum mortality rate was seen among those managed with combination of crystalline penicillin+ gentamicin.

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