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# IMPROVING THE MANAGEMENT OF COMMUNITY ACQUIRED PNEUMONIA (CAP) IN PEADIATRIC

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## ABSTRACT

Community acquired pneumonia (CAP) is a significant cause of respiratory morbidity and mortality in children, especially in developing countries. Worldwide, Community acquired pneumonia (CAP), in the leading causes of death in children younger than 12 years. Pneumonia is defined as the acute inflammation of the lung parenchyma distal to the terminal bronchioles (consisting of the respiratory bronchiole, alveolar ducts, alveolar sacs and alveoli). the terms pneumonia and pneumonitis are often used synonymously for inflammation of the lungs, while consolidation (solidification) is the term used for gross and radiologic appearance of the lungs in pneumonia. Pneumonia is the inflammations of lung parenchyma due to the pathogenic micro- organism such as bacteria, viruses and fungi. Clinically, it is also defined as a condition typically associated with fever, respiratory symptoms and evidence Parenchymal involvement, either by physical examination or the presence of infiltrates on chest radiograph.

**KEYWORDS:** Pneumonia, Zinc, Community Acquired Disease.

## INTRODUCTION

Community acquired pneumonia (CAP) is a significant cause of respiratory morbidity and mortality in children, especially in developing countries. Worldwide, Community acquired pneumonia (CAP), in the leading causes of death in children younger than 12 years.[1] Pneumonia is defined as the acute inflammation of the lung parenchyma distal to the terminal bronchioles (consisting of the respiratory bronchiole, alveolar ducts, alveolar sacs and

alveoli). the terms pneumonia and pneumonitis are often used synonymously for inflammation of the lungs, while consolidation (solidification) is the term used for gross and radiologic appearance of the lungs in pneumonia.[2]

There are two clinical definitions of pneumonia:

1. Bronchopneumonia which is a febrile illness with cough, respiratory distress with evidence of localised or generalised patchy infiltrates on chest x-ray
2. Lobar pneumonia which is similar to bronchopneumonia except that the physical findings and radiographs indicate lobar consolidation.[3]

Pneumonia is the inflammations of lung parenchyma due to the pathogenic micro- organism such as bacteria, viruses and fungi. Clinically, it is also defined as a condition typically associated with fever, respiratory symptoms and evidence Parenchymal involvement, either by physical examination or the presence of infiltrates on chest radiograph.[4] Zinc plays a critical role in maintaining the integrity of immune system. Pneumonia and diarrhea can be prevented by regular supplementation of zinc in children. zinc supplementation relived their symptoms and signs of severe pneumonia quicker than the other group who did not receive zinc. Also, zinc supplementation significantly decreased the duration of hospital addmission.[5] It is estimated that pneumonia is responsible for >2 million deaths each year in children below 5 years of age, and contributes 20% of the annual deaths in this age group. Approximately 95% of the pneumonia-related deaths occur in developing countries, and the younger age groups have the highest risk of death. Zinc supplementation lowers the risk of acute respiratory illnesses and diarrhea in children.[6] There is no single definition for pneumonia. It is a clinical illness defined in terms of symptoms and signs, and its course.

## METHODOLOGY

***Study site:*** The study is to be conducted in department Of Child Health at Government district Head Quarters Hospital, Tiruppur.

***Study design:*** This is a observational prospective study and is to be carried out in department of child health of Govt. District .Head. Quarters Hospital, tiruppur.

***Study period:*** The study is carried out for 6 months from march 2018 to september 2018.

***Study population:*** The study population includes the patients of Gov. district Head Quarters Hospital, tiruppur. A total of 100 number cases were selected, out of these 50 cases were taken from prescribing zinc and 50 cases from non prescribing zinc.

***Statistical Analysis***

1. Data were entered and analyzed using Microsoft Excel (Windows 8; version 2007).
2. Graphical representation is used for visual interpretation of the analyzed data.

***Inclusion criteria***

1. Case is referred from department of child health.
2. Children less than the age 12.
3. Patient co morbidities and disease conditions.

***Exclusion criteria***

- Patients who are unwilling to undergo the study.
- All adult patients
- Patients admitted in ICU emergency patients
- AIDS patients and tuberculosis.

***Selection of patients***

The data will be collected from Govt. district head quarters hospitals, tiruppur. The various sources used for collection of the data included the following:

- Inpatient medical and medical history.
- Inpatient case sheet.

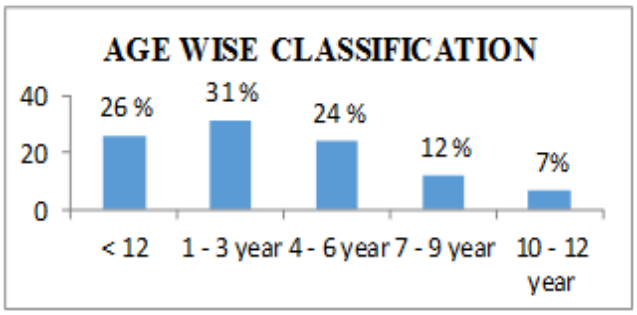
***Expected outcomes***

- To study the drug use and prescription pattern.
- To ensure the rational use of drugs and implement the standard treatment guidelines.
- To minimize the medication error.
- To minimize the drug interaction, drug- food interaction and to report ADRs.
- To reduce the duration of stay in hospital
- To provide patient counseling.

## OBSERVATION AND RESULTS

### Age Wise Distribution

| Age Group | Frequency | Percentage (%) |
|---|---|---|
| < 12 months | 26 | 26 |
| 1 – 3 years | 31 | 31 |
| 4 – 6 years | 24 | 24 |
| 7 – 9 years | 12 | 12 |
| 10 – 12 years | 7 | 7 |

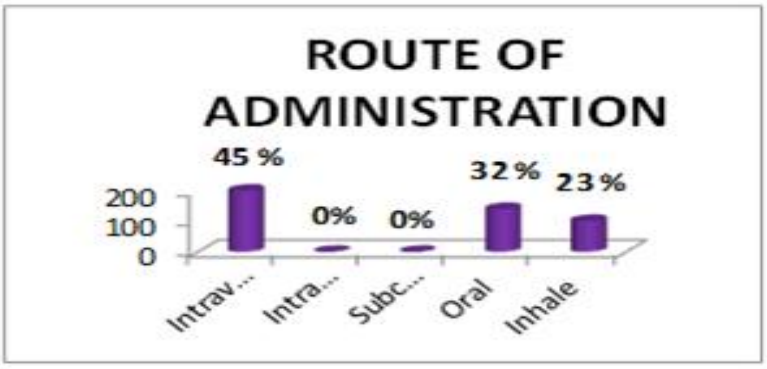



### Gender Wise Distribution

| Age | % of Male | % of Female |
|---|---|---|
| < 12 | **25** | **33** |
| 1 - 3 | **28** | **25** |
| 4 - 6 | **19** | **22** |
| 7 - 9 | **15** | **12** |
| 10 - 12 | **11** | **6** |

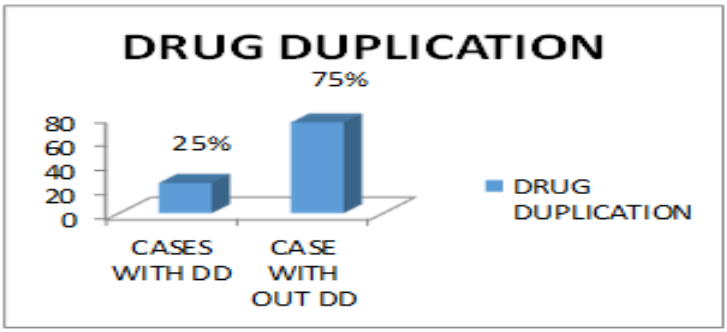

### Route of Administration

| ROA | Sub - class | Frequency | (%) |
|---|---|---|---|
| Injectables | Intravenous | 200 | 45 |
| | Intramuscular | - | 0 |
| | Subcutaneous | - | 0 |
| Oral | - | 140 | 32 |
| Inhale | - | 101 | 23 |



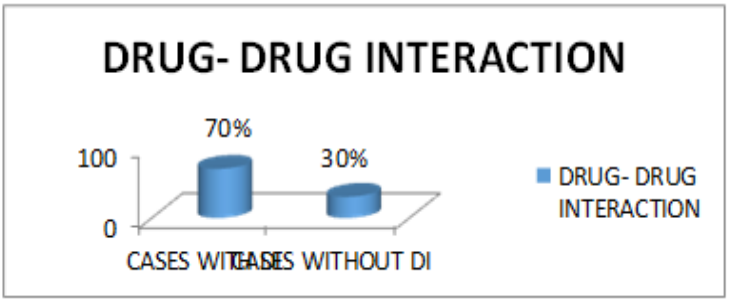

**Therapeutic Drug Duplication per Encounter**

| Therapeutic Drug Duplication | No. of Prescription | (%) |
|---|---|---|
| Cases with DD | 25 | 25 |
| Cases with out DD | 75 | 75 |
| **THERAPEUTIC DRUG DUPLICATION** | **NO. OF PRESCRIPTION** | **(%)** |
| Cases with DD | 25 | 25 |
| Cases with out DD | 75 | 75 |



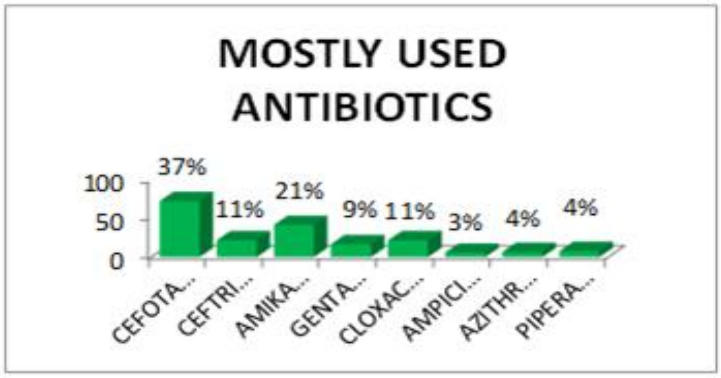

**Drug –Drug Interaction per Encounter**

| DI | No. of Prescription | (%) |
|---|---|---|
| CASES WITH DI | 70 | 70% |
| CASES WITHOUT DI | 30 | 30% |



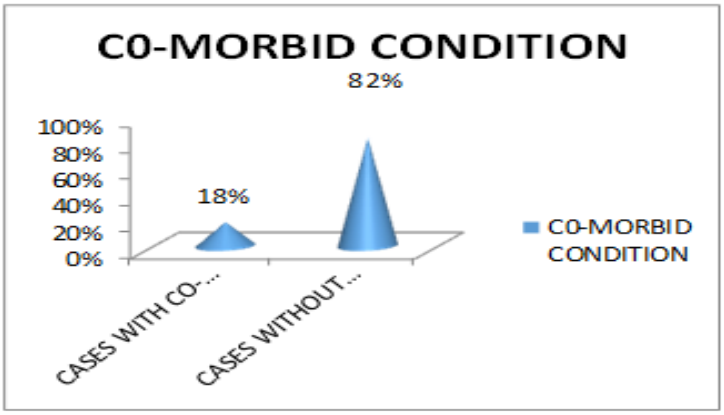
**Mostly Used Antibiotics**

| Antibiotics | Frequency | (%) |
|---|---|---|
| CEFOTAXIME | 73 | 37 |
| CEFTRIAXONE | 22 | 11 |
| AMIKACIN | 42 | 21 |
| GENTAMYCIN | 17 | 9 |
| CLOXACILLIN | 22 | 11 |
| AMPICILLIN | 6 | 3 |
| AZITHROMYCIN | 7 | 4 |
| PIPERACILLIN | 8 | 4 |



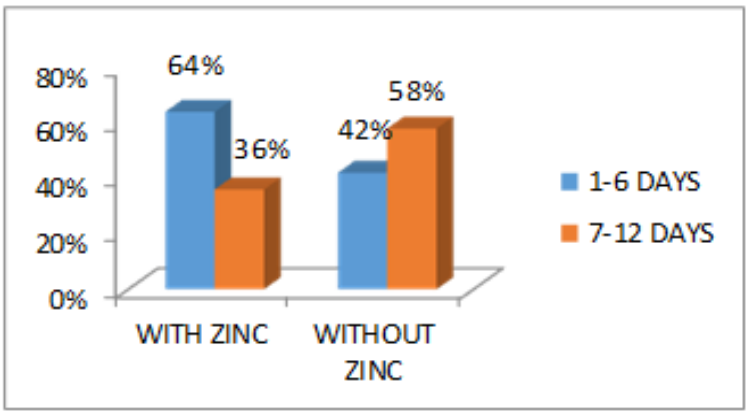

**Co-Morbidities**

| Co-Morbidities | Number of Prescription | (%) |
|---|---|---|
| CASE WITH CO-MORBIDITIES | 18 | 18 |
| CASE WITHOUT CO-MORBIDITIES | 82 | 82 |




**Role of Zinc in Hospital Duration**

| | 1-6 DAYS | 7-12 DAYS |
|---|---|---|
| WITH ZINC | 64% | 36% |
| WITHOUT ZINC | 42% | 58% |




## DISCUSSION

This study was conducted to find out the role of zinc in the treatment of community acquired pneumonia (CAP) in pediatrics. The patients selected for our studies was below 12 years old. These studies are used to determine the drug- drug interaction, therapeutic duplications, various co – morbidities and mostly used antibiotics. Pediatrics population treating the health problems and face a number of challenges as these patients have susceptible to many disease and drug related problems. So these study was done to described the role of zinc in the treatment of community acquired pneumonia (CAP). In this study total 100 patients were collected. The majority of the patients were in the age group of 1-3 years (male 28%, female 25%) followed by < 12 years (M=25%, F=33%), 4-6 years (M= 19%, F=22%), 7-9 years (M=15%, F=12%), and 10-12 years (M=11%, F=6%). In our study the main route of administrations is Intravenous (IV) 45% followed by oral 32% and inhale 23%.

In our collected data, we observed that 25% of cases with therapeutic duplications and 75% of cases without therapeutic duplications and also find out the drug- drug interactions. 70% of cases with drug - drug interaction and 30% of cases without drug -drug interaction. During this study we find out some co-morbidities conditions like seizure, headache, dizziness, loose stools. Here 18% of cases having co –morbid condition and cases without co-morbid condition is 82%. The mostly used antibiotic for this study was Cefotaxime (37%), and followed by Ceftriaxone (11%), Amikacin (21%), Gentamycin (9%), Cloxacillin (11%), Ampicillin (3%), Azithromycin (4%) and Piperacillin (4%).

In this study, zinc tablets are used for the treatment of community acquired pneumonia (CAP), As a result the hospital stay was decreased, while compared to the patients without using zinc tablets. The percentage difference can be represented as follows (1-6 days) with

zinc 64%, without zinc 42%, and (7-12 days) with zinc 36%, without zinc 58%. Here, mainly 2 status are observed in the patients outcome they are improved, and recovery. While adding zinc supplement in the treatment of community acquired pneumonia more patients are cure from community acquired pneumonia in pediatrics within a small duration, when compared to the patients who were not taking zinc tablet.

## CONCLUSION

The present study was aimed to find the role of zinc in the management of community acquired pneumonia in peadiatrics and also compared role of zinc tablet in hospital duration. Here the present study shows that while adding zinc tablet for the treatment of CAP in peadiatrics, the duration of hospital stay of patients or less than compared to the patient without using zinc tablet. In our study, we observed that, while using zinc tablet patients are cured with in 1-6 days, and the patients without using zinc tablet are cured with in 7-12 days.

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