

Current Prescribing Practices For The Hospitalized Children Suffering From Pneumonia With Respect To Essential Drug List Of Bangladesh

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Abstract: Pneumonia is a common illness in all parts of the world. It is a major cause of death among all age groups. In children, the majority of deaths occur in the newborn period, with over two million worldwide deaths a year. In fact, the WHO estimates that one in three newborn infant deaths is due to pneumonia. Antibiotics and some supportive drugs are given commonly as the treatment of pneumonia in hospitals. This retrospective study was designed to observe the adherence of the prescribing practices of hospitalized children suffering from pneumonia with the essential drug list (EDL) of Bangladesh. During the ten-months study period, 532 children (under 5 years of age) suffering from Pneumonia were enrolled from the Institutes of Child Health & Shisu Sasthya Foundation Hospital, Mirpur, Dhaka. The study revealed that cephalosporin alone or in combination with an aminoglycoside was the most common antibiotic prescribed for the treatment of children suffering from pneumonia. But surprisingly this given treatment had very insignificant (7.98%) adherence with the essential drug list (EDL) of Bangladesh. This study, therefore, suggests the need for updating the EDL of Bangladesh with modern evidence. Furthermore, countywide multicenter research with a larger sample can be carried out to consolidate the observation of this study.

Keyword: Pneumonia, Essential Drug List, Ceftriaxone, Prescription, EDL.

I. INTRODUCTION

Pneumonia is a severe form of acute lower respiratory tract infection (LRTI) that specifically affects the lungs [1]. It affects children everywhere but is most prevalent in South Asia and sub-Saharan Africa. In fact, the WHO estimates that one in three newborn infant deaths is due to pneumonia. Every year, it kills an estimated 1.1 million children under the age of five years which is 18% of all deaths of children under five year's old worldwide [2]. Antibiotics and some supportive [3] drugs are given commonly as the treatment of pneumonia in hospitals.

Essential drugs (EDs) are the foundation of nearly every public health program. EDs are aimed at reducing morbidity and mortality rate in Bangladesh [4] as well as in other developing countries [5]. These drugs are those that satisfy the priority health care needs of the people and are selected with due regard to disease prevalence, evidence on efficacy & safety and comparative cost-effectiveness. According to WHO (2012) essential medicines are intended to be available within the context of functioning health systems at all times in adequate amounts, in the appropriate dosage forms, with assured quality and at a price the individual and the community can afford[6]. Careful selection of a limited range of essential medicines results in a higher quality of care for patients, better management and use of medicines and more cost-effective use of health resources. Clinical guidelines [7] and lists of essential medicines may improve the availability and proper use of medicines within health care systems.

Most countries have national lists and some have provincial or state lists as well. National lists of essential medicines [6] usually relate closely to national guidelines for clinical health care practice which are used for the training and supervision of health workers. A list of essential drugs is supposed to be updated regularly, but in Bangladesh no major review has been made since 1982.

The aim of this study was to bring out the list of drugs commonly prescribed in the hospitals of Bangladesh for the treatment [8] of pneumonia as well as to find out its adherence with the Essential Drug List (EDL) of Bangladesh.

II. MATERIALS AND METHODS

The study was a descriptive study, in which 532 hospitalized children (under 5 years of age) with Pneumonia were taken. Treatment information was collected retrospectively from hospital records by filling the Case Report Form (CRF). The samples were collected from the Institutes of Child Health (ICH) & Shisu Sasthay Foundation (SSF) Hospital Mirpur, Dhaka from January 2013 to October 2013.

The study was performed by completing 3 stages of the procedure. At first many literatures on pneumonia treatment were reviewed to find out the situations and scopes of pneumonia treatment. Then necessary data were collected using the previously prepared CRF. Data regarding treatment given to the pneumonia patients were collected retrospectively from records of ICH & SSF Hospital, Dhaka. Variables like patient's age, gender, type of antibiotics & supportive drugs given in the treatment of pneumonia, percentage of drugs from essential drug list during the pneumonia treatment in hospital were observed. In the final stage data were analyzed with the help of analytical software SPSS (Statistical Package for the Social Science) version 13.0.

III. RESULTS AND DISCUSSION

Among the 532 patients most of the infected children were male (Fig. 1). This result of the study has similarities with that of some other studies¹. This study also revealed that the prevalence of pneumonia is highest in children of 0-6 months and gradually decreases with age (Fig. 2) with the mean age of 11.66 months Aruolb & Stern's study[9] showed that incidence of pneumonia was decreased gradually according to increasing of age of children. The cause of increasing incidence of pneumonia in below 6 months age group may be due to a lack of antibody against common viral and bacterial pathogens [9]. Moreover, most of the patients (61.5%) had to stay in the hospital for 2-5 days (Fig. 3) with at least 1 day for 10.5% patients. According to Feagan and his co-workers[10], the duration of hospital stay and overall treatment cost depend on clinical practice guidelines. In some Canadian hospitals they found that 79.8% of patients received treatment according to clinical practice guidelines [11]. The median length of stay was ranged from 3.0 to 6.5 days across hospitals. Our study also found a similarity with their one that the average duration of hospitalization of pneumonia patients in ICH was 4.3 days.

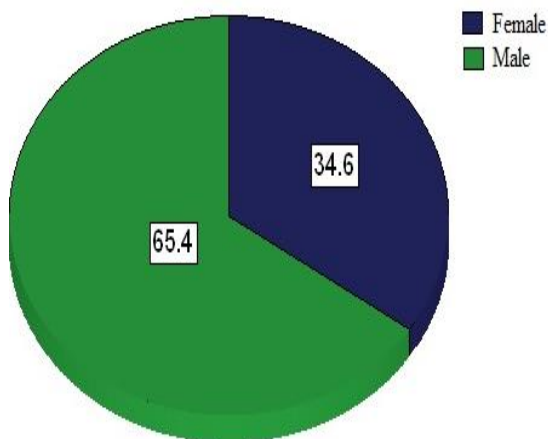


Fig. 1: Gender distribution of children

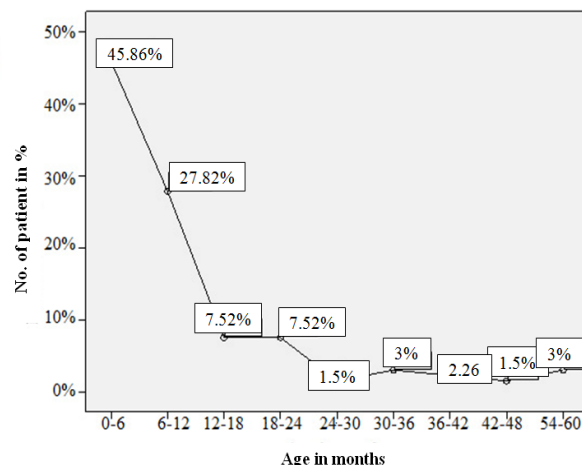


Fig.2: Age distribution of children

Regarding the treatment, number of antibiotics [12],[13] was used less compared to other supportive drugs (Fig. 4) like in Mongolia where Dorj and his group [14] found that antibiotics take only one-third share of total drugs in case of treatment pneumonia.

Among the antibiotics [15],[16] Ceftriaxone [17], Amikacin and Cefotaxime were found most commonly prescribed (Fig. 5). In addition, combination [18] of beta lactum antibiotic with aminoglycosides was also a highly prescribed. In some

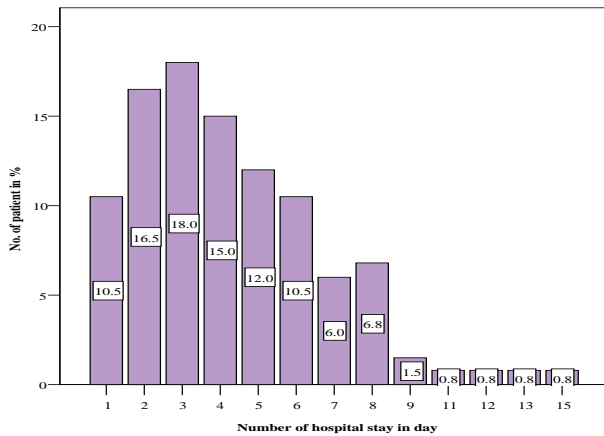


Fig. 3: Distribution of hospital stay

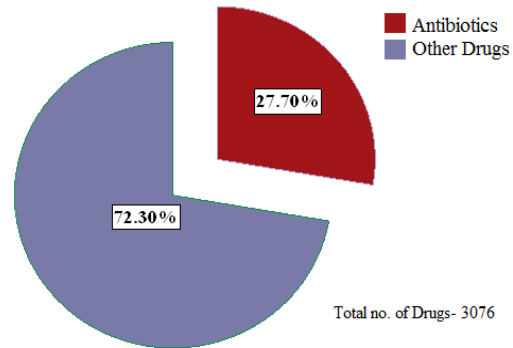


Fig. 4: Distribution of types of drug

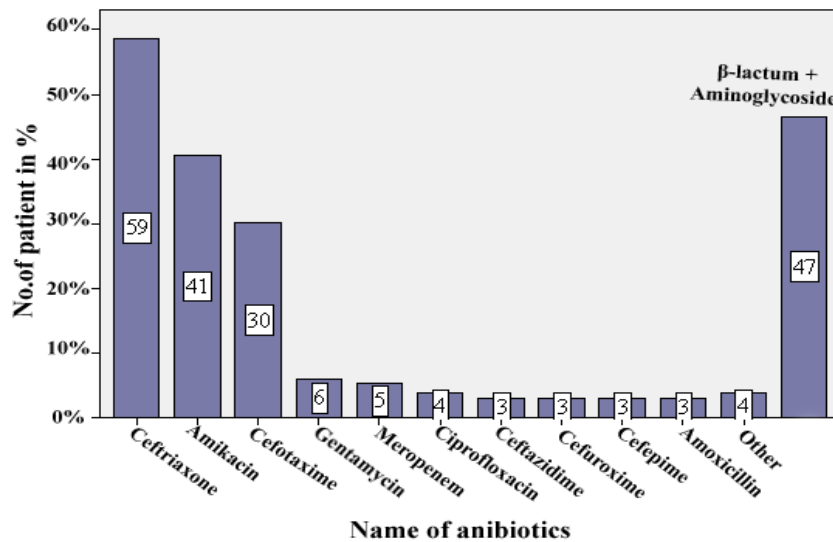


Fig. 5: Distribution of types of antibiotics

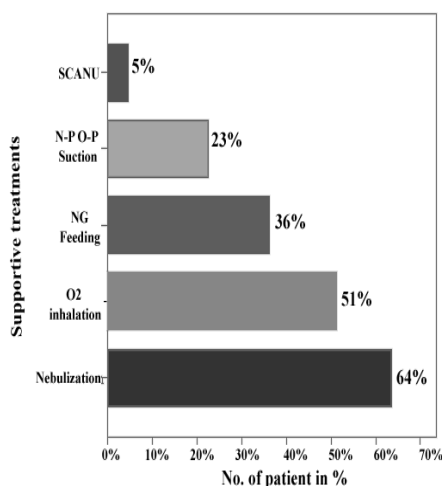
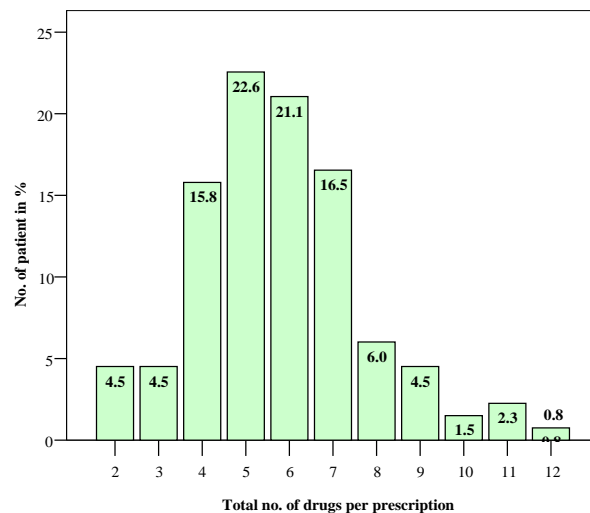
Previous studies it was also found that combination therapy can give synergistic activity as the spectrum of antibacterial activity can increase and chances of bacterial resistance can decrease [19], [20], [21], [22].

As a supportive therapy [23], [24] Salbutamol and Ipratropium combination and paracetamol alone were found most frequently used (TABLE I). Another important outcome of this study was the frequent use of hydrocortisone (33.08%) which in recent years has been found highly effective as a supportive treatment for pneumonia children. Lamontagne [25] and his fellows found that low-dose corticosteroids may reduce all-cause mortality in patients with severe pneumonia. In another study of Weiss and his group found that adjunct corticosteroids were associated with a shorter hospital length of stay (LOS) among patients who received concomitant β-agonist therapy. A longer LOS and a greater odd of readmission were found among patients who did not received therapy with systemic corticosteroids. Weiss and his group [26] considered β-agonist therapy as a proxy for wheezing.

Table I: Percent Distribution Of Supportive Drugs Used To Treat The Children Suffering From Pneumonia.

Name of Drugs	Percent of patient exposed
Salbutamol + Ipratropium	75.93%
Paracetamol	54.89%
Hydrocortisone	33.08%
B/S	30.83%
Furosemide	16.54%
Ambroxol	13.53%
NaCl 0.9% Nasal Drop	13.53%
Folic Acid	9.77%
Salbutamol syrup	9.02%
Oradaxon	8.27%
Potassium	8.27%
Levosambutamol	7.52%
Ranitidine	6.77%
Vit+Min	6.77%
Zinc	6.02%
Miconazole Oral Gel	6.02%
Dextrose + sodium chloride	6.02%
Cholera saline	6.02%
Other	23.30%

According to WHO[1], it was assumption that almost all of pneumonia patient require at least one kinds of supportive therapy to manage or control pneumonia and/or associated diseases. Our study shows most of the children receiving nebulization, oxygen inhalation, NG Feeding and N-P O-P Suction (Fig. 6). According to this statistical result of this study it can be said that maximum patient required nebulization[27] and oxygen[28] inhalation during treatment with pneumonia in hospital. This study also found that most of the children were prescribed with 5 to 6 drugs for the treatment of pneumonia (Fig. 7). In Mongolia, Dorj and his fellows[15] also observed the prescribing practices for the treatment of mild or moderate Pneumonia with respect to national prescribing guidelines. Their study found an average of 3 drugs per prescription in Mongolia. So it can be assume that, usual number of drugs per prescription for the treatment of pneumonia in Bangladesh is higher in than that of Mongolia.

**Fig. 6:** Distribution of types of supportive**Fig. 7:** Number of drugs/prescription

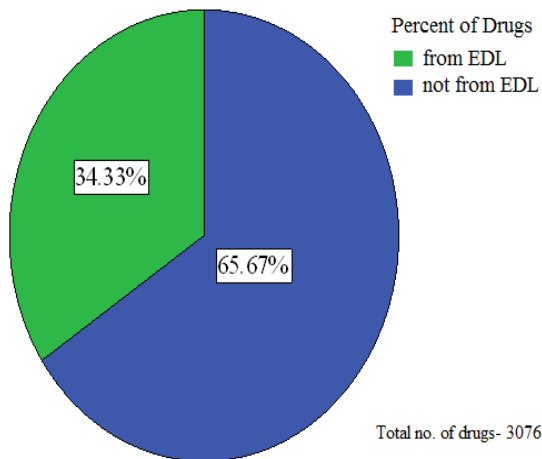


Fig. 8: Distribution of drugs from EDL

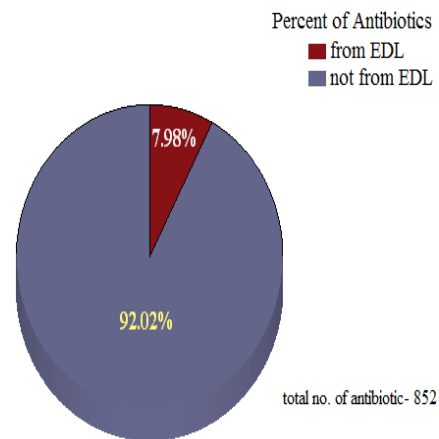


Figure 9: Distribution of antibiotics from EDL

From this study result, it was shown that total 3076 number of drugs was prescribed to children who were suffering from pneumonia (Fig. 8). Among the drug around one-third was from essential drug list (EDL) of Bangladesh. It was also found that total 852 antibiotics was prescribed to children who were hospitalized with pneumonia (Fig. 9). A very few number of total antibiotics was from the EDL of Bangladesh. Ahmed & Islam [29] detected that even after many years of approving the NDP 1982, the availability and rational use of drugs and the affordability of the poor people have remained to be achieved in Bangladesh. Surprisingly the prices of key essential drugs differed 500% or more by brands [28]. Evidence showed that the situation deteriorated in terms of both availability of essential drugs and their rational use.

IV. CONCLUSION

Antibiotics and some other supportive drugs are prescribed commonly as the treatment of pneumonia in hospital. This research found insignificant adherence of the given treatment with the essential drug list (EDL) of Bangladesh. Therefore a major review needs to be done with current EDL. In terms of updating the essential drug list comprehensively according to the clinical need for the treatment of pneumonia, further follow up is required for the inclusion of the evidence based effective drugs. Concerted efforts are needed to motivate and train those healthcare professionals about the benefits of prescribing from the national EDL, especially for the poor patient. Furthermore, for making a strong regulatory capacity of Directorate of Drug Administration close monitoring and regular updating procedure need to be added in their operations. In conclusion, nationwide further multicenter research with a larger sample should be conducted to consolidate the observation of this study.

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