Use of Antibiotics within the Integrated Management of Childhood Illness (IMCI): Guidelines in Pediatric Outpatient Settings

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ABSTRACT

Background: The success of standardized measures for disease classification and treatment has led disease-specific approaches led WHO and UNICEF to incorporate them into a set of guidelines for the integrated management of childhood illness (IMCI), which includes modules or subsets of guidelines for the recognition and management of children with acute respiratory infections, diarrhea, measles, malaria and other febrile illness, and malnutrition. **Objective:** To assess the use of antibiotics within the IMCI Guidelines in Pediatric Outpatient Settings of Jinnah Hospital. **Methodology:** It was a cross-sectional study conducted at Pediatrics OPD Jinnah Hospital from May 1, 2014 – August 21, 2014. The 150 children and their parents / accompanying person fulfilling the inclusion criteria after consultation from pediatric consultation were interviewed regarding their disease status and prescription by the doctor regarding antibiotics and other conditions. All the information was entered in a structured questionnaire. The samples were collected by non-probability / purposive sampling technique. **Results:** Among 150 children included in study mean age of children was 36 months SD 20.42 months. 60% were male and 40% female. Presenting complaints among children were, 75.0% presented fever, 26.4% had loose motions, 22.3% has vomiting, 20.3% had cough. 12.8% presented with abdominal pain. Among those who received antibiotics, 10% received third generation cephalosporin (ceftriaxone, cefexime), 10.7% penicillin's (mostly amoxicillin and piperacillin), and 4% ciprofloxacin. 30% received combination of 2 or 3 antibiotics (14.7% combination of ceftriaxone and amikacin (aminoglycoside), According to IMCI guidelines 34% were not appropriately treated, 20.7% received antibiotics when they should not and 13.3% did not received antibiotics when they should have. **Conclusion:** Their low adherence to integrated management of childhood illness (IMCI) recommendations for prescription of antibiotics in routine outpatient settings the study shows highly prevalent use of third generation cephalosporins.

Keywords: integrated management of childhood illness guidelines, antibiotics, outpatients.

INTRODUCTION

Case management approaches for the diagnosis and treatment of childhood illness in developing countries often use a limited set of signs and symptoms and standardized measures for disease classification and treatment. For children with acute respiratory infection and diarrheal disease, such approaches have been documented to reduce both cause-specific and overall childhood mortality.[1,2]

The success of these disease-specific approaches led WHO and UNICEF to incorporate them into a set of guidelines for the integrated management of childhood illness (IMCI), which includes modules or subsets of guidelines for the recognition and management of children with acute respiratory infections, diarrhea, measles, malaria and other febrile illness, and malnutrition; conditions responsible for over 70% of childhood deaths in developing countries.[3]

Because children may present to a health care facility with more than one disease and different disease entities may be manifested by the same array of common symptoms, the IMCI scheme

allows for the simultaneous diagnosis of more than one disease and ensures that each will receive treatment, if indicated. Worldwide, the leading causes of death in children under five years (excluding perinatal mortality) are pneumonia, diarrhea and malaria. These three diseases are responsible for an estimated 5 million deaths yearly, over 90% of which occur in Africa and other developing countries with limited resources.[1-2]

At a community level and in outpatient settings, the few available studies show that pneumonia; diarrhea and malaria are similarly responsible for a high burden of morbidity in developing countries.[3-7]

This study was conducted in controlled conditions with defined inclusion and exclusion criteria. No study investigated the accuracy of diagnosis and the impact of appropriate treatment on health outcomes in routine practice.

METHODOLOGY
A cross-sectional study was conducted among 150 children visiting Jinnah Hospital OPD from 4 months from May 1, 2014 – August 21, 2014 employing non probability / purposive sampling. Parents of children age 2 weeks to 5 years were included in the study. The data was collected by carefully interviewing the guardian of the child and the attending doctor. The interviewer herself will fill the questionnaire. The doctor regarding antibiotics and other conditions interviewed those who are fulfilling the inclusion criteria after consultation from pediatric consultant regarding their disease status and prescription. All the information was entered in a structured questionnaire.

Inclusion Criteria: Children of age 2 weeks to 5 years will be included in the study

Exclusion Criteria: Children suffering from diseases other than pneumonia, diarrhea, malaria, malnutrition and febrile diseases were excluded from the study.

Data was entered and analyzed in SPSS version 17.0. Mean and standard deviation was calculated for numerical variables like age, duration of illness. Frequency and tabulation was calculated for diseased or condition presented in pediatric OPD, use of antibiotics or drugs given under IMCI guidelines.

RESULTS
Mean age of children were 36 months SD 20.42 months. Among 150 children included in study 60% were male and 40% female. Presenting complaints among children were analyzed 75.0% presented fever, 26.4% had loose motions, 22.3% had vomiting, 20.3% had cough. 12.8% presented with abdominal pain.

Among those who received antibiotics, 10% received third generation cephalosporin (ceftriaxone, cefexime), 10.7% penicillin's (mostly amoxicillin and piperacillin), and 4% ciprofloxacin. 30% received combination of 2 or 3 antibiotics (14.7% combination of ceftriaxone and amikacin (aminoglycoside), 9.3% ceftrioxne and clarithromycin (macrolide), 6.7% ceftriaxone and vancomycin), 4% received antiamoebic mostly for dysentery, only 2% received antimalarial (artemether and lumefantrine).

This shows highly prevalent use of third generation cephalosporin's esp. ceftriaxone, which is recommended, in severe disease. There is also high prevalence of use of paracetmol 44 out of 150 (29.3%) received it. According to IMCI guidelines 34% were not appropriately treated, 20.7% received antibiotics when they should not and 13.3% did not received antibiotics when they should have.

DISCUSSION
Although the IMCI strategy has been used for more than 20 years, few studies have investigated its effectiveness and appropriateness. Specifically, there is limited information on how well health workers comply with IMCI guidelines in routine practice, and on the impact of IMCI recommendations on health outcomes.[8-9]

Although most experts agree that the introduction of IMCI has improved the quality of care at limited cost, IMCI has however some limitations such as the absence of objective diagnostic tools or no consideration of the local epidemiology. All may result in low specificity of IMCI algorithms, especially to identify bacterial infections that require antibiotics.[3,9-15]

Therefore, many children might receive unnecessary antibiotics. Furthermore, it still remains debated how many children who receive antibiotics prescribed according to IMCI recommendations benefit from them. For example, a study from Pakistan demonstrated that children with mild pneumonia did not benefit from antibiotics.[9]

Case management of sick children is almost exclusively syndrome-based using IMCI guidelines.

In outpatient settings, few diagnostic tools are available and until 2011 microscopy or RDTs were rarely available in health facilities to confirm malaria infections. Thus, presumptive treatments with antimalarial and/or antibiotics are prescribed to cover common diseases such as pneumonia, malaria or otitis media. In PNG, as in many places, no data are available on the performance of the IMCI strategy in outpatient settings.

For children with acute respiratory infections and diarrheal disease, such approaches have been documented to reduce both cause-specific and overall childhood mortality.[1-2]

The success of these disease-specific approaches led WHO and UNICEF to incorporate them into a set of guidelines for the integrated management of childhood illness (IMCI), which includes modules or subsets of guidelines for the recognition and management of children with acute respiratory infections, diarrhea, measles, malaria and other febrile illness, and malnutrition; the conditions responsible for over 70% of childhood deaths in developing countries.[3]

Because children may present to a health care facility with more than one disease and different disease entities may be manifested by the same array of common symptoms, the IMCI scheme allows for the simultaneous diagnosis of more than one disease and ensures that each will receive treatment, if indicated. The IMCI guidelines contain a module for the evaluation of febrile children that focuses on the diagnosis and treatment of malaria. In areas where malaria is highly prevalent, the high predictive value of fever for malaria makes this focus appropriate.[4]

This shows highly prevalent use of third generation cephalosporin's esp. ceftriaxone, which is recommended, in severe disease. There is also high prevalence of use of paracetmole 44 out of 150 (29.3%) received it. According to IMCI guidelines 34% were not appropriately treated, 20.7% received antibiotics when they should not and 13.3% did not received antibiotics when they should have.

These observations suggest that removing the fever module in an area of low malaria prevalence and adding stiff neck to the list of danger signs could simplify the IMCI guidelines. In our study population, all children with meningitis would have received antibiotics if this change had been in place. Four (1%) children in our population who had no diagnosed bacterial infection would have received antibiotics if stiff neck had been added to the list of danger signs and excess effort to determine whether a child has fever and to evaluate children with fever would be eliminated.

In our study, among those who received antibiotics, 10% received third generation cephalosporin (ceftriaxone, cefexime), 10.7% penicillin's (mostly amoxicillin and piperacillin), and 4% ciprofloxacin. 30%-received combination of 2 or 3 antibiotics (14.7% combination of ceftriaxone and amikacin (aminoglycoside), 9.3% ceftrioxne and clarithromycin (macrolide), 6.7% ceftriaxone and vancomycin), 4% received antiamoebic mostly for dysentery, only 2% received antimalarial (artemether and lumefantrine).

Alternatively, the IMCI guidelines could be improved by retaining the fever module but improving the sensitivity of that module by examining the child for a stiff neck and danger signs, as is currently done, and asking parents if their child has an increased respiratory rate. Febrile children with a stiff neck, danger signs or parental report of increased respiratory rate would receive antibiotics. This strategy would maximize the number of children with bacteremia who are treated with antibiotics.

CONCLUSION
There low adherence to IMCI recommendations for prescription of antibiotics in routine outpatient settings of Jinnah hospital. This absence of effectiveness of antibiotics is certainly due to the lack of specificity of the present recommendations to differentiate children with true bacterial diseases and those with viral infections.

RECOMMENDATIONS
It is urgently needed to develop better strategies to improve the identification of pneumonia and other syndromes that require antibiotics or more intensive clinical care

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AUTHORSHIP AND CONTRIBUTION DECLARATION
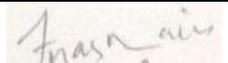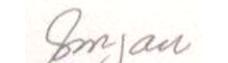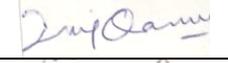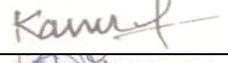
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