

USE OF PROCALCITONIN AS A GUIDE FOR ANTIBIOTIC PRESCRIPTIONS IN ACUTE RESPIRATORY INFECTIONS AMONG SCHOOL CHILDREN IN DAR ES SALAAM TANZANIA

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ABSTRACT

Antibiotic resistance has become a global concern, with the inappropriate use of antibiotics which includes over prescription, inadequate dosage and its use in nonbacterial infections becoming a problem both locally and internationally. Procalcitonin (PCX) is elevated in bacterial infection and there is a growing body of evidence that supports the use of PCX to improve diagnosis of bacterial infections, including the use of its algorithm to guide the decision about initiation ± discontinuation of antibiotic therapy. This study used PCX to assess its effectiveness in reducing unnecessary use of antibiotics amongst school children with acute respiratory infections (ARIs) in two selected hospitals in Dar es Salaam, Tanzania. In this cross sectional study conducted between January and March 2018; 146 consecutive school children with suspected ARIs were enrolled. Exit interviews were conducted with study participants using a standard questionnaire, information about their clinical manifestations and treatment prescribed were recorded. Blood samples were collected from all study participants for PCX analysis using a sandwich immuno-detection method. Data collected from the participants was stored in Microsoft Excel file 2007 and then transferred to EPI Info version 7.2 statistical software for analysis. PCX algorithm (see Fig 2) was used to assemble the participants in two groups; group one included those with a high likelihood of nonbacterial infection (PCX 0.25ng/ml). Analysis of the data revealed that the most common clinical symptoms present were cough and fever which were present in 139(93.3%) and 120(82.2%) of study participants consecutively. The most common respiratory system examination findings were crackles 23(15.7%) and chest in drawing, 16(10.9%). A total of 105(71.9%) had a low PCX level which translated into a high likelihood of a nonbacterial infection. Odds ratio and 95% confidence interval showed a positive association with all clinical manifestations (symptoms and signs) that were present in each study participants with regard to their PCX level; however, no statistical significant

association could be demonstrated. The total antibiotic prescription rate was 52.1 % (76/146), and as per the PCX algorithm (see Fig.2), 76.3 % (58/76) of study children received antibiotics which were not indicated. The current study observed a high rate of antibiotic prescriptions in school children with ARIs in Dar es Salaam, for which the etiology was most likely nonbacterial, and use of antibiotics was not indicated. Results of this study have highlighted the need to consider inflammatory biomarkers like PCX as a predictor to guide antibiotic prescriptions in children with ARIs.