Correspondence

Antibiotic use for febrile illness in rural paediatric population: Questions?

Sir,

Mathew et al\textsuperscript{1} in their study have shown that 31 per cent of the study population were tested positive for the presence of antibiotic in urine and 90 per cent admitted that prior treatment was given for the same episode of fever. Only 34.5 per cent of the study population obtained the drugs by prescription. This reflects a high occurrence of antibiotic use for initial treatment of fever. Excessive prescribing of antibiotics may lead to emergence of drug resistant organisms, it subjects the patients to additional adverse effects of the drugs being taken, and increases the expenditure on drugs\textsuperscript{2,3}. Overestimation of severity of the disease symptoms and patient expectation may influence the medical practitioner while prescribing the antibiotics\textsuperscript{4}.

However, there are some questions that remained unanswered in the study. Firstly, the study was hospital-based and the subjects were recruited from those attending the outpatient facility in each study center (Community health and Development Hospital, Vellore, Tamil Nadu and Postgraduate Institute of Medical Education and Research, Chandigarh)\textsuperscript{1}. The sampling method used to select the 64 subjects was not clear and whether any randomization was done has not been stated. Due to these reasons the study may be subject to selection bias\textsuperscript{5,6}. The study population may not be representative of the general population. It may be possible that those subjects who had received prior treatment at home, in a primary health center, a local clinic or a private hospital but whose symptoms had persisted after the initial treatment had visited the study centers and were included. Those in whom the symptoms had subsided with or without taking the antibiotics were unlikely to visit the study centers. Thus, there is an inherent bias.

Secondly, the antibiotics assayed were trimethoprim/sulphamethoxazole, amoxycillin, ciprofloxacin, cephalexin and cefuroxime. Why these particular antibiotics were chosen to be assayed over others has not been stated. In a survey by Sivagnanam et al\textsuperscript{7}, most used group of antibiotics in southern part of India were aminopenicillins, quinolones and cephalosporins, most commonly prescribed being amoxycillin, ciprofloxacin and co-trimoxazole.

Thirdly, it has been stated that more than one third of children with febrile illness will have had prior treatment with antibiotics. As the study was hospital-based and no randomization was done, this assertion may be an underestimation or overestimation that cannot be ascertained.

Majority of the subjects presented with the symptom of fever alone\textsuperscript{1}. Fever may be due to many reasons. Sivagnanam et al\textsuperscript{7} have showed in their survey that the most commonly treated conditions by physicians in the southern part of India were lower respiratory tract infections, urinary tract infections and diarrhoea and all the three conditions may cause fever and has a considerable bacterial aetiology\textsuperscript{8}. However, uncomplicated urinary tract infections can be treated empirically\textsuperscript{9}. Initial empirical antibiotic therapy is indicated for community acquired pneumonia\textsuperscript{10}. Appropriate initial empirical antibiotic therapy may reduce the duration of hospitalization in patients with community acquired pneumonia\textsuperscript{11}. In rural settings, where facilities for culture/sensitivity of the causative organisms are not present, empirical therapy with antibiotics based on proper guidelines may be acceptable.

Mathew et al\textsuperscript{1} suggested continuing medical education on antibiotic prescribing for medical personnel employed in local clinics discouraging the pharmacies from selling antibiotics over the counter without a prescription from qualified medical personnel to reduce the overuse of antibiotics. In addition, delayed prescription, to be used later if symptoms persists, may
be an effective way to check the overprescription of antibiotics. Evidence that delayed prescriptions may reduce the use of antibiotics was given by Little et al\(^1\) in case of sore throat. Delayed prescriptions have also been found to be effective in reducing antibiotic use in case of respiratory tract infections\(^2\). The antibiotic use must be rational to decrease the adverse effects, reduce cost and prevent the emergence of drug resistant organisms.

**Conflict of interest:** None.

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**References**


**Authors’ response**

Sir,

We thank Datta\(^1\) for the interest shown in our article\(^2\). However, it is possible that the correspondent has not fully understood the scope of this study. The first paragraph of the manuscript briefly describes the background of the study. To elaborate, in 2005, the Indian Council of Medical Research with the help of Johns Hopkins University set out to describe the burden of disease from *Haemophilus influenzae* (Hib) infection in three sites in India; Vellore, Haryana (Chandigarh) and West Bengal (Vaccine probe study). Preliminary analysis of data showed that a majority of children had a history of having received medicines prior to being seen by the study team. Blood and CSF cultures in many of the study children had consistently failed to grow organisms leading to a speculation that the study children may have had one or more doses of prior antibiotics and in a large proportion, parents had given a history of the child having received medication prior to being seen by the study physician. In view of this problem the above study was initiated which served as a screen for qualitative analysis of urine specimens in children with acute febrile illness presenting to a secondary care hospital. The first issue raised by the reader was in relation to sampling methods with a query on randomization and a possible selection and inherent bias. Paragraph three of the article\(^2\) describes the inclusion criteria of the study over the three months period. To find children with a prodrome that includes acute febrile illness one could either start active surveillance in the community to identify them (as and when it happens) which is rather laborious\(^3\) or wait for them to arrive at a hospital that caters to a rural community (as in this study). Surveillance in
a community is bound to change health care seeking behaviour and hence the latter is a preferred method provided the local community utilize the facility. It has not been stated that all children were selected, in fact children had to fulfill inclusion criteria and the parent had to sign a consent form. So not all children were chosen but there was no systematic effort to prevent some children from joining the study which is what the reader has stated (selection bias). The study was a cross-sectional prospective bi-centre study\(^2\).

Again it is possible that only subjects whose symptoms had persisted after prior treatment at home, or a local clinic, in a primary health centre or local hospital had arrived at the secondary care facility and were recruited. But it was their first visit for the present acute febrile illness to either of the study hospitals. The purpose of this study was to investigate only the proportion of patients who had received prior antibiotics for that particular acute febrile episode (paragraph 2 of the manuscript) among those who presented to the secondary care facility. While it is possible that among those from the community who did not come to these study hospitals, all were receiving antibiotics or none at all, this design used secondary care hospitals to source children on the assumption that people from the local community used these facilities for health care. We failed to mention that the study site in the Post Graduate Institute of Medical Education and Research was not in Chandigarh, but in Yamuna Nagar in Haryana and at a secondary care facility where the local community went for medical care. It was not the aim of this study to estimate the antibiotic use in the general population. As for those patients who the author suggests had an improvement with or without antibiotics and thereby did not report to the study hospital, one could only commend on the rational management of these patients. Again the purpose of this study was to investigate only the proportion of patients who had received prior antibiotics for that particular acute febrile episode among those who presented to the secondary care facility.

Secondly, the decision to assay the mentioned five antibiotics was based on earlier evidence supplied by the health centers and this choice is borne out by the studies of Sivagnanam et al, as quoted by Datta\(^1\), and a report by Indira Kumari et al\(^4\). Thirdly, we have clearly mentioned that more than one third of children with febrile illness will have had prior treatment with antibiotics. Our estimate would be an underestimate since it included only those patients who presented to the secondary care facility and not every child in the community who had acute febrile illness in the three month period.

We did not aim to comment on the rationale of antibiotic use in the study population. We fully agree with the reader that the empiric management of specific infections from proper guidelines can be adopted. However, this does not justify the use of over the counter medicines or the use of medications left over from a previous episode (both of which added up to 60.3% using the questionnaire in our study\(^3\)). We have highlighted the importance of discouraging sale of over the counter medicines and educating parents to curtail the use of antibiotics.

We are in agreement that delayed prescriptions could reduce use of antibiotics\(^5\). However, most of these studies have been done in the West with a literate population. In low middle income countries such as India, sale of over the counter antibiotics is widely prevalent. Hence the concept of delayed prescriptions may not be entirely applicable in such scenarios.

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**References**


