Prehospital use of paracetamol among children attending the accident and emergency department

S Mason, S Thorp, D Burke

Objectives: To identify patterns of prehospital administration of paracetamol to children who were perceived to be feverish by their carers.

Methods: A prospective cohort study of carers of children attending a paediatric accident and emergency (A&E) department. Carers of children completed a questionnaire to identify domestic patterns of paracetamol use. Data were collected on temperature of the child in the A&E department, administration of antipyretics in the A&E department, diagnosis, and disposal from the A&E department.

Results: Seventy five adults attending the A&E department consented to involvement. Sixty five of the children were feverish on arrival in the A&E department. Twenty one children (32.3%) had not received paracetamol before attending. There was a significant relation between knowledge of the antipyretic properties of paracetamol and administration ($\chi^2=5.0, p<0.05$). There was a significant correlation between fever and administration of paracetamol in the A&E department ($\chi^2=23.7, p<0.01$), however, 1.5 feverish patients (24.6%) were not treated.

Conclusions: Most carers administer paracetamol appropriately in the prehospital setting. Administration correlates significantly with knowledge of its benefits. There is scope for education of carers and A&E department staff in the appropriate use of antipyretics such as paracetamol.

Data handling
Data were entered onto a database and analysed using the SPSS for Windows Version 6.1. Data compared differences in prehospital paracetamol administration using $\chi^2$, Fisher’s exact tests or $t$ tests. A level of $p<0.05$ was taken as being significant.

RESULTS
Seventy five carers of children presenting to the A&E department completed questionnaires correctly. The male:female ratio was 1.6:1.0, with an age range (median) of 3 months to 13 years (2 years).

On presentation, 65 of the 75 children were still feverish (86.7%). There was no difference between the mean ages of those feverish and non-feverish children (3.2 years (SD=3.9) compared with 2.7 years (SD=2.9), $t(73)=0.44, p=0.66$). Twenty one (32.3%) children had not received paracetamol before attending, all but one was feverish at presentation. There was no difference in mean age between those who received paracetamol before presentation and those who did not (2.6 years (SD=2.7) compared with 3.5 years (SD=3.9), $t(73)=1.2, p=0.23$).

Table 1 summarises the reasons for not administering paracetamol.

Knowledge of administration
There was a significant correlation between knowledge of paracetamol use (see questionnaire on web site (item 4)) and prehospital administration ($\chi^2=5.0, p<0.05$). Most carers knew that paracetamol could be given four to six hourly (n=60, 80%). Of those who had administered paracetamol, 61.1% (n=33) had given the correct dose. Most had used Calpol (n=23, 42.6%), but 14 were unable to state what
Table 1  Reason for non-administration of paracetamol prehospital

<table>
<thead>
<tr>
<th>Reason for non-administration</th>
<th>Feverish group n (%) n=19</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unaware of benefits/didn’t think to use it</td>
<td>4 (21.1)</td>
</tr>
<tr>
<td>None in household</td>
<td>2 (10.5)</td>
</tr>
<tr>
<td>Child vomiting/refused</td>
<td>4 (21.1)</td>
</tr>
<tr>
<td>No parents present</td>
<td>4 (21.1)</td>
</tr>
<tr>
<td>Want to check with doctor/unsure about giving</td>
<td>2 (10.5)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (15.8)</td>
</tr>
</tbody>
</table>

Resolution of fever
Of the 65 feverish children, 21 (32.3%) had not been given prehospital paracetamol. Fifty (66.6%) children were subsequently given antipyretics in the A&E department. A further 15 (24.6%) patients were feverish, but no action was taken by A&E department staff. There was a significant correlation between fever and antipyretic administration (χ² = 23.7, p < 0.01). Most (n=28, 56.0%) received paracetamol, the rest received ibuprofen (n=13, 26.0%) or a combination of paracetamol and ibuprofen (n=9, 18.0%). Of the feverish patients attending, all but one had resolution after antipyretic administration and a period of observation in the A&E department.

Diagnoses and disposal
Table 2 shows the distribution of discharge diagnoses. Twelve (16.0%) patients were admitted. There was no correlation between administration of paracetamol at any time and disposal (Fisher’s exact test, p=0.49).

DISCUSSION
Most carers seem to administer paracetamol appropriately for a perceived feverish illness. However, there is scope for education of carers in the benefits of paracetamol and other antipyretics. These findings are echoed by previous studies, which identified a shortfall in knowledge about fever and antipyretic administration. Blumenthal stated that improving parental perceptions of the dangers of fever and the use of antipyretics might avoid consultations. Some children were noted to be feverish at triage, but did not receive antipyretics. Given that the evidence for the benefits of antipyretics exists, failure to administer it is a training issue. Although not recorded here, the use of antipyretics may expedite transit time in the A&E department. Thomas conducted a national survey of A&E department nurses, and found that most nurses used tepid sponging, administration of antipyretics or both to reduce temperatures. All but one child had a resolution of their fever in the A&E department. It is not possible to determine whether the period of observation or administration of antipyretics was the most beneficial. Further work to investigate this relation is required.

There is some evidence for the presence of a fever benefiting host defence mechanisms. Some authors advise against the use of antipyretics stating that fevers are not harmful, but drugs have potential harmful side effects. However, given that carers perceive fevers to be associated with morbidity, it may provoke less anxiety and promote carer confidence in managing minor self limiting paediatric illnesses.

Study limitations
Carers attending the A&E department with children who are unwell are a self selected population, which means that these data may not be generalisable to the population as a whole. There may be differences in knowledge of the management of an ill child in our population when compared with a primary care population. The small sample size may lead to some clinically significant effects not reaching statistical significance.

In conclusion, this study has shown that most carers of children are aware of the benefits of using paracetamol for fevers. This knowledge increases the likelihood that paracetamol will be administered. Significantly more children presenting with a perceived feverish illness who had been pretreated were apyrexial on arrival in the A&E department. Paracetamol use did not influence the decision to admit or discharge patients from the A&E department. Education of carers and A&E department staff should be ongoing to improve knowledge of the benefits of antipyretics.

Contributors
SM formulated the idea for this study. SM and ST designed the study. ST collected the data and developed the database. ST, SM, and DB analysed the data and wrote the paper. SM will act as guarantor for the paper.

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REFERENCES