Antibiotic use in the management of common cold in children at Popondetta General Hospital: A prospective point-prevalence study

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DCH
Introduction

• Common cold:
  ▪ Caused by a variety of viruses, particularly rhinovirus, which do not respond to antibiotics
  ▪ Antibiotics can cause side effects, especially diarrhoea, and overuse of antibiotics leads to bacteria becoming resistant to antibiotics
  ▪ Antibiotics are still widely prescribed despite evidence indicating their ineffectiveness
    ▪ Prescription rates range from 8.5% - 88%
  ▪ No published data for prescription rates in PNG
Aims

• To determine the rate of antibiotic prescription for common cold among children presenting to the COPD at PGH
• To assess the clinical knowledge and practices of the staff regarding common cold
Methodology

Determining antibiotic prescription rate

- Patients diagnosed by COPD staff were sent straight to a separate room; there, they were consented, their clinic notes were reviewed and information obtained was entered into a questionnaire. They were then re-assessed.

- Antibiotics were ceased for all patients who were found to have common cold

- Informed on IMCI danger signs, signs of PNA and home remedies and advised to return if danger signs occur

- **Study duration:** 6 weeks (28/3/17 – 10/5/17)
Assessing clinical knowledge and practices of staff

- Questions on the cause of common cold and its management were asked using structured questionnaires

Data analysis

- Epi info version 7 for analysis

• Case definition for common cold used in the survey
  “Any child whose prominent symptoms are cough, sneezing, rhinorrhea, nasal obstruction and low grade fever of 37.5°C–38.5°C; and who has no IMCI danger signs, stridor or crepitations on auscultation of the chest”
- **Exclusion criteria**
  - All neonates, and
  - All children:
    - >12 years old
    - who are asthmatics or have allergies
    - whose symptoms last >10 days
    - who do not meet the **case definition** of the survey
    - previously included in the survey
    - with a concurrent ailment that requires antibiotics
• **Variables of Interest and measurements**
  - Prevalence of antibiotic prescription
  - Clinical staffs’ knowledge
  - Clinical staffs’ practices

• **Ethical approval**
  - PGH management and UPNG research ethics committee

• **Intention to treat**
  - Patients found to have another diagnosis during the survey were treated accordingly
Results

Divided into 2 parts:

- *Part 1*: Determining antibiotic prescription rate
- *Part 2*: Assessing staff knowledge and practices
Part 1: Determining antibiotic prescription rate
<table>
<thead>
<tr>
<th>Sex</th>
<th>No.</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>54</td>
<td>50</td>
</tr>
<tr>
<td>Female</td>
<td>54</td>
<td>50</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Age</th>
<th>No.</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 12 mo</td>
<td>36</td>
<td>33</td>
</tr>
<tr>
<td>13 – 60 mo</td>
<td>54</td>
<td>50</td>
</tr>
<tr>
<td>&gt; 60 mo</td>
<td>18</td>
<td>17</td>
</tr>
<tr>
<td>Mean age</td>
<td>3 years</td>
<td></td>
</tr>
<tr>
<td>Median age</td>
<td>2 years</td>
<td></td>
</tr>
<tr>
<td>IQR</td>
<td>10 – 48 months</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PC</th>
<th>No.</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cough</td>
<td>106</td>
<td>98</td>
</tr>
<tr>
<td>Fever</td>
<td>94</td>
<td>87</td>
</tr>
<tr>
<td>Rhinorhrea</td>
<td>90</td>
<td>83</td>
</tr>
<tr>
<td>Nasal obstruction</td>
<td>57</td>
<td>53</td>
</tr>
<tr>
<td>Sneezing</td>
<td>48</td>
<td>44</td>
</tr>
<tr>
<td>Tachypnoea</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Mean duration</td>
<td>3 days</td>
<td></td>
</tr>
<tr>
<td>IQR</td>
<td>1 – 4 days</td>
<td></td>
</tr>
</tbody>
</table>
Summary of patient management

Total children
n = 110

Included in study
n = 108

Excluded
n = 2

Antibiotic prescribed
n = 89 (82.4)

*Advised on symptomatic relief
n = 65 (73)

No advice
n = 24 (27)

No antibiotic
n = 19 (17.6)

*Advised on symptomatic relief
n = 19 (100)

No advice
n = 0

- Fisher’s exact test p value = 0.006
- Amoxicillin – most commonly prescribed antibiotic (87 %)
### Table 2: Comparing age, duration of symptoms and history and presence of fever with antibiotic prescription

<table>
<thead>
<tr>
<th>Age (mo)</th>
<th>Total No.</th>
<th>No. (%) prescribed antibiotic</th>
<th>No. (%) not prescribed antibiotic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-12</td>
<td>36</td>
<td>23 (64)</td>
<td>13 (36)</td>
<td>0.0008</td>
</tr>
<tr>
<td>≥13</td>
<td>72</td>
<td>66 (92)</td>
<td>6 (8)</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Duration of symptoms</th>
<th>Total No.</th>
<th>No. (%) prescribed antibiotic</th>
<th>No. (%) not prescribed antibiotic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – 5 days</td>
<td>89</td>
<td>70 (79)</td>
<td>19 (21)</td>
<td>0.022</td>
</tr>
<tr>
<td>6 - 10 days</td>
<td>19</td>
<td>19 (100)</td>
<td>0</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fever</th>
<th>Total No.</th>
<th>No. (%) prescribed antibiotic</th>
<th>No. (%) not prescribed antibiotic</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hx of fever</td>
<td>94</td>
<td>77 (82)</td>
<td>17 (18)</td>
<td></td>
</tr>
<tr>
<td>No Hx of fever</td>
<td>14</td>
<td>12 (86)</td>
<td>2 (14)</td>
<td>0.4</td>
</tr>
<tr>
<td>Afebrile on examination</td>
<td>24</td>
<td>20 (83)</td>
<td>4 (17)</td>
<td></td>
</tr>
<tr>
<td>Febrile on examination</td>
<td>25</td>
<td>23 (92)</td>
<td>2 (8)</td>
<td></td>
</tr>
<tr>
<td>No record</td>
<td>58</td>
<td>45 (76)</td>
<td>13 (24)</td>
<td></td>
</tr>
</tbody>
</table>
Part 2: Assessing staff knowledge and practices
<table>
<thead>
<tr>
<th>Pathogen</th>
<th>CHW n = 23 (%)</th>
<th>NO n = 47 (%)</th>
<th>RHEO n = 6 (%)</th>
<th>HEO n = 4 (%)</th>
<th>MO n = 4 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virus(es)</td>
<td>22 (96)</td>
<td>45 (96)</td>
<td>5</td>
<td>4</td>
<td>4</td>
</tr>
<tr>
<td>Non - viruses</td>
<td>1 (4)</td>
<td>2 (4)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Antibiotic treatment</th>
<th>CHW n = 23 (%)</th>
<th>NO n = 47 (%)</th>
<th>RHEO n = 6 (%)</th>
<th>HEO n = 4 (%)</th>
<th>MO n = 4 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>No antibiotic Rx</td>
<td>13 (56)</td>
<td>28 (60)</td>
<td>5</td>
<td>4</td>
<td>3</td>
</tr>
<tr>
<td>Requires antibiotic Rx</td>
<td>10 (44)</td>
<td>15 (31)</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Unsure of antibiotic Rx</td>
<td>4 (9)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Name of antibiotic</th>
<th>CHW n = 23 (%)</th>
<th>NO n = 47 (%)</th>
<th>RHEO n = 6 (%)</th>
<th>HEO n = 4 (%)</th>
<th>MO n = 4 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin</td>
<td>5 (22)</td>
<td>11 (23)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-trimoxazole</td>
<td>5 (22)</td>
<td>2 (4)</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Erythromycin</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Chloramphenicol</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any of the above-mentioned antibiotics</td>
<td>2 (4)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Discussion

• Prescription rate of 82.4% was 3rd highest in the published literature (highest 88% in Ethiopia)
• Parents were more likely to be given supportive advice if their child was not prescribed an antibiotic
• There is still lack of knowledge regarding appropriate management of common cold
Factors influencing prescribing behaviour

- Duration of symptoms
- Age of the child
- Fever on examination (not statistically significant)
- Diagnostic uncertainty
- The staffs’ knowledge of the value of antibiotics
Ways to address this issue

- Staff education
- Patient education, including community awareness
- Restricting the categories of health workers who are prescribing antibiotics
Limitations

• Small sample size, obtained from only one clinic
• Unable to follow up all the patients
• May not be generalisable to other parts of the country
Conclusions

• Rate of antibiotic prescription for common cold at PGH COPD is very high
• 2/5 of staff lack knowledge in managing common cold
• This data can be used to make awareness promoting proper antibiotic use
Acknowledgement

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• Paediatric team of PMGH
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• All the clinical staff of PGH who participated in the survey
• The management of PGH
References


25. —. Summary of steps in emergency triage assessment and treatment. *Pocket Book of Hospital Care for Children guidelines for the management of common illnesses with limited resources.* 2005.