EVALUATION OF ORAL ANTIBIOTIC UTILIZATION IN MEDICAL INPATIENTS

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ABSTRACT
The study was conducted to evaluate the effectiveness of regulations on antibiotic utilization after oral route of administration. It was performed before and after imposing regulations on antibiotics administration. The uses of all antibiotics were regulated using drug formulary and restrictions reduced costs of oral antibiotics and due to a shortened period of volume of therapy while optimizing care

INTRODUCTION
To day, antibiotics are one of the most expensive drug expenditure in hospitals accounting for 20% to 50% of total pharmacy spending with intravenous antibiotics like ampicillin, amoxicillin with clavulanate, and first generation cephalosporins who received antibiotics orally were increased by 17%. The number of patients who have received antibiotics orally were increased by 17%. The drugs which were changed to oral route of administration without much delay were the macrolide (Azithromycin), extended spectrum antibiotics like ampicillin, amoxicillin with clavulanate, and first generation fluoroquinolone like Ciprofloxacin.

STUDY MATERIAL
The study was performed in the medical ward. The individual patient profiles of all in patients admitted in this ward were studied. Regulations were imposed on the antibiotic prescription pattern and adherence to hospital formulary was strictly implemented. Doses of all antibiotics consumed were recorded. All the collected data were analyzed using chi-square test at 5% level of significance and the differences were tested at p<0.05 (two-tailed).

RESULTS AND DISCUSSION
2375 patients were treated with antibiotics during the pre-regulatory period. Out of this 1534 consumed orally. After implementing the regulation on the antibiotic prescription, the study showed that out of 2425 patients treated with antibiotics, 1832 consumed them orally. The total doses of antibiotics consumed orally before and after the regulations were recorded (Table-1).

Table 2: Summary of the Number of Doses of Antibiotics Consumed (Oral Administration)

<table>
<thead>
<tr>
<th>Antibiotics</th>
<th>Use of antibiotics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Before Regulation n (n (%))</td>
</tr>
<tr>
<td>Total Number of Doses of Antibiotics Consumed (n)</td>
<td>15130</td>
</tr>
<tr>
<td>Extended Spectrum Penicillins</td>
<td>3545 (23.43)</td>
</tr>
<tr>
<td>Cephalosporins-First Generation</td>
<td>588 (3.89)</td>
</tr>
<tr>
<td>Cephalosporins-Second Generation</td>
<td>1326 (8.76)</td>
</tr>
<tr>
<td>Cephalosporins-Third Generation</td>
<td>3125 (20.65)</td>
</tr>
<tr>
<td>Lincosamides</td>
<td>806 (5.33)</td>
</tr>
<tr>
<td>Macrolides</td>
<td>1559 (10.30)</td>
</tr>
<tr>
<td>Oxazolidinones</td>
<td>114 (0.75)</td>
</tr>
<tr>
<td>Fluoroquinolones First Generation</td>
<td>1993 (13.17)</td>
</tr>
<tr>
<td>Fluoroquinolones-Second Generation</td>
<td>1860 (12.29)</td>
</tr>
<tr>
<td>Sulphonamides and Trimethoprin</td>
<td>188 (1.24)</td>
</tr>
<tr>
<td>Imidazole Derivatives</td>
<td>26 (0.17)</td>
</tr>
</tbody>
</table>

*p-value calculated using Chi-square test (two tailed, α = 0.05)
The total numbers of doses of Second and Third generation Cephalosporins, Lincosamides, drugs belonging to Oxazolidinone category were reduced after the regulations. A reduction in the consumption of Sulphonamides, Penicillin and Imidazole derivatives were also observed after the interventions. These reductions after the regulations justify the rational use.

The extended spectrum antibiotics were the most commonly prescribed antibiotic during the pre regulatory period. The total numbers of doses of these class of antibiotics were increased in the post regulatory period. Amoxicillin was the most commonly used drug of choice during the period of study for upper respiratory infections particularly for sinusitis. But increase in the resistance against this drug caused an increase in the use of amoxicillin combined with clavulanate. Use of macrolid antibiotics increased mainly due to the increase in the use of Azithromycin for the treatment of bronchitis. Use of first generation fluoroquinolones were increased whereas the consumption of the second generation fluoroquinolones did not alter much indicating its selective use in entrobacteriae infections. The increase in the consumption of these oral antibiotics showed that the infections can be treated with these classes rather than drugs belonging to higher class.

CONCLUSION
The evaluation of antibiotics utilization showed that the effective use of oral antibiotics was improved after the regulation. The study emphasizes that strict regulation on the use of antibiotics is essential to promote rationalization of antibiotic therapy. Early switching over from parenteral to oral and reduced use of expensive class of antibiotics leads not only to appropriate use but also made the treatment more cost effective.

REFERENCES