Abstract

Keywords: interventions, policy, antibiotic use, perioperative antibacterial prophylaxis

In the global surgical practice the issue of the need for a perioperative antibacterial prophylaxis (PABP) has been positively resolved in the late 1970s. PABP reduces the frequency of surgical infections and allows for reduction of antibiotic consumption, which is important for implementation of policies of containment of antimicrobial resistance in a hospital setting.

The objective: to evaluate effects of interventions introducing PABP at surgical departments

Study design: in 2007-2009 the following interventions were implemented: (1) PABP clinical protocols developed for various surgical departments and training workshops for physicians carried out (12/2007); (2) official order on implementation of PABP issued (10/2008); (3) changes in the list of drug prescriptions for registration of the first pre-operative antibiotic dose introduced (10/2008); (4) audit and feedback implemented since 07/2008.

Evaluation of changes in antibiotic use was carried out on quarterly basis b analyzing changes in antibiotic consumption (hospital pharmacy data) using ATC/DDD methodology. Antibiotic consumption was measured as the number of defined daily doses per 100 bed-days (DDD/100 bed-days). Two surgical departments were chosen for detailed monitoring: vascular surgery and traumatology. Statistical analysis was performed using the method segmented regression analysis and Z-test for two independent proportions.

Results

Before the interventions (2007) the total amount of antibiotic drugs used for systemic treatment was 27 DDD/100 bed-days at the department of vascular surgery and 14 DDD/100 bed-days at the department of traumatology. In 2009 (after carrying out the interventions) antibiotic consumption at the department of vascular surgery decreased by 13 DDD/100 bed-days (48%) and became 14 DDD/100 bed-days, at the department of traumatology – decreased by 8 DDD/100 bed-days (42%) and became 11 DDD/100 bed-days.

The second and third interventions were associated with a large stepwise reduction of antibiotic consumption at both departments (figure 1 and 2).

Conclusion

This study showed that antibiotic use in hospital can be significantly improved by active implementation of PABP policy consisting of multiple interventions.

Policy relevance

antibiotic use in hospital can be significantly improved by active implementation of PABP policy consisting of multiple interventions.

Literature cited

6. Cephalosporin III was identified in 2009 of cephalosporin III (cefotaxime). This new method was used in 2009 to identify the antibiotic consumption (hospital pharmacy data) using ATC/DDD methodology. Antibiotic consumption was measured as the number of defined daily doses per 100 bed-days (DDD/100 bed-days). Two surgical departments were chosen for detailed monitoring: vascular surgery and traumatology.

Fig. 1. Change of use of systemic antibiotics (DDD/100 bed-days) at the department of vascular surgery under the influence of interventions , 2007-2009

Fig. 2. Change of use of systemic antibiotics (DDD/100 bed-days) at the department of traumatology under the influence of interventions, 2007-2009.

Table 1. Antibiotic consumption at departments of vascular surgery, traumatology, and 2007-2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Department</th>
<th>Vascular Surgery</th>
<th>Traumatology</th>
</tr>
</thead>
<tbody>
<tr>
<td>2007</td>
<td>3.5</td>
<td>2.3</td>
<td>0.5</td>
</tr>
<tr>
<td>2008</td>
<td>2.5</td>
<td>1.8</td>
<td>0.8</td>
</tr>
<tr>
<td>2009</td>
<td>1.2</td>
<td>0.5</td>
<td>0.0</td>
</tr>
</tbody>
</table>

Remarks: * P<0.05 compared with the data in 2007.