Breast cancer (BC) is the most common type of cancer among women in the world and also in Brazil (excluding non-melanoma skin cancer), ac-
counting for about 28% of new cases each year. It can also affect men, although it is rare, representing only 5% of the total cases of the disease. Relatively uncom-
mon before age 50, the incidence of BC increases steadily afterwards, especially after age 50. Studies indicate an increased incidence in both developed and de-
vilopment countries (BC) is the most frequently diagnosed neoplasm and considered to be the leading cause of cancer-related death among women [11].

Since 1999, the mortality rate has been declining, suggesting the benefit of early detection, better diagnostic methods and more effective treatments. Nevertheless, these advances have brought a considerable increase in the total cost of BC treatments [12].

Issues related to the cost of cancer treatment have been the focus of discus-
sions in international conferences for quite some time. According to the American So-
ciety of Clinical Oncology (ASCO), high-quality treatment will be increasin-
gly less accessible to large number of cancer patients unless steps are taken to re-
verse the current trends on therapy costs [13].

Oncologic treatments represent a large portion of the expenses incurred in by the public and private health care systems in Brazil [13]. Alternative treatments have sought in order to continue to deliver the treatments to the population in a sustainable fashion [14].

The challenges are even bigger for BC treatments; the cost of medications is higher and since treatments are becoming longer, the cost is con-
sequently escalating.

Scientific publications have failed to demonstrate that bevacizumab has a positive impact in overall survival or quality of life in patients with advanced breast cancer (ABC).

Our goal was to assess through real world data (RWD) if oncologists con-
form to the official list of prices. Conversion rate was: 1 U$ = R$ 3,3.

Anonymized data regarding patients diagnosed with ABC receiving beva-
cizumab in combination with different chemotherapy regimens 2012 to 2016 were retrieved from Auditron®, the official list of prices.

Cost analyses of bevacizumab in combination with other chemotherapy medications, generating a negative economic impact of the order of $12,830,330.28 (U$ 3,867,978.87) in an already overburdened PHS.

References


Table 3. Studies Supporting each Chemotherapy Regimen

<table>
<thead>
<tr>
<th>Chemotherapy Regimen</th>
<th>Number of Requests</th>
<th>Supported by Literature</th>
<th>Overall Costs</th>
<th>Increase in Overall</th>
<th>Increase in Survival</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paclitaxel + Bevacizumab</td>
<td>110</td>
<td>Yes</td>
<td>No</td>
<td>$3,507,384.00</td>
<td>$11,307,384.00</td>
</tr>
<tr>
<td>Capetaxine + Bevacizumab</td>
<td>8</td>
<td>Yes</td>
<td>No</td>
<td>$65,101.32</td>
<td>$65,101.32</td>
</tr>
<tr>
<td>Docetaxel + Bevacizumab</td>
<td>4</td>
<td>No</td>
<td>No</td>
<td>$25,598.61</td>
<td>$25,598.61</td>
</tr>
<tr>
<td>Paclitaxel + Carboplatin + Bevacizumab</td>
<td>2</td>
<td>No</td>
<td>No</td>
<td>$4</td>
<td>$4</td>
</tr>
<tr>
<td>Gemcitabine + Bevacizumab</td>
<td>2</td>
<td>No</td>
<td>No</td>
<td>$2</td>
<td>$2</td>
</tr>
<tr>
<td>Nabivacizumab</td>
<td>1</td>
<td>No</td>
<td>No</td>
<td>$1</td>
<td>$1</td>
</tr>
<tr>
<td>Paclitaxel + Bevacizumab + Trastuzumab</td>
<td>1</td>
<td>No</td>
<td>No</td>
<td>$1</td>
<td>$1</td>
</tr>
<tr>
<td>Bevacizumab</td>
<td>1</td>
<td>No</td>
<td>No</td>
<td>$1</td>
<td>$1</td>
</tr>
</tbody>
</table>

Table 4. Costs of Each Chemotherapy Regimen

<table>
<thead>
<tr>
<th>Chemotherapy Regimen</th>
<th>Direct Costs</th>
<th>Cost Per Cycle</th>
<th>Overall Costs</th>
</tr>
</thead>
<tbody>
<tr>
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<td>$65,101.32</td>
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<td>Nabivacizumab</td>
<td>$1</td>
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<td>$1</td>
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<tr>
<td>Paclitaxel + Bevacizumab + Trastuzumab</td>
<td>$1</td>
<td>$1</td>
<td>$1</td>
</tr>
<tr>
<td>Bevacizumab</td>
<td>$1</td>
<td>$1</td>
<td>$1</td>
</tr>
</tbody>
</table>

Cost Analyses

- Direct cost of all regimens that had no support from the literature was $12,830,330.28 (U$ 3,867,978.87) for the health care providers on the PHS. Table 4 details the costs of each regimen.

- Most regimens with bevacizumab for ABC are prescribed based on studies that use progression-free survival as the main endpoint.

- Almost in the few (17.2%) of all requests including bevacizumab for ABC lack robust scientific evidence to support them. Some, are even prescribed based on extrapolations from studies on non-metastatic breast cancer.

- Nevertheless, oncologists from all Brazilian regions still prescribe the drug in combination with other chemotherapy medications, generating a negative economic impact of the order of $1,307,183.32 (U$ 387,978.87) in an already overburdened PHS.

Correlation between requested regimens and literature results

- Of all the chemotherapy requested regimens, only paclitaxel plus bevacizu-

- Based on scientific support for each of the requested regimens, in parallel, a search on the published literature was performed to identify the scientific support for each of the requested regimens.

Chemotherapy regimens

- We retrieved 135 prescriptions including bevacizumab for patients with ABC from all regions of the country. Table 1 details the characteristics of the patients.

- Bevacizumab was added to nine chemotherapy regimens: paclitaxel (110 re-

- Characteristics of The Population

- Table 1. Characteristics of The Population

- Mean 51.73 67.33 1.58 1.68
- Mode 51 60.00 1.48 1.80
- Median 52 60.00 1.60 1.60

Table 2. Distribution of Chemotherapy Regimens Containing Bevacizumab

- Paclitaxel + Bevacizumab 110 (82.70%)
- Capetaxine + Bevacizumab 8 (6.01%)
- Docetaxel + Bevacizumab 4 (3.1%)
- Paclitaxel + Carboplatin + Bevacizumab 4 (3.1%)
- Gemcitabine + Bevacizumab 2 (1.50%)
- Capetaxine + Gemcitabine + Bevacizumab 2 (1.50%)
- Nabivacizumab 1 (0.73%)
- Paclitaxel + Bevacizumab + Trastuzumab 1 (0.73%)
- Bevacizumab 1 (0.73%)

Paclitaxel + Bevacizumab
- Number of requests (%)

- Table 2. Distribution of Chemotherapy Regimens Containing Bevacizumab

- Our literature search found that good quality studies [11] evaluating the use of chemotherapy combinations for the treatment of ABC-demonstrate:

- Significant increase in progression-free survival (still controversial/endpoint)
- Significant increase in response rates (also a secondary endpoint)
- No significant increase in overall survival (relevant clinical endpoint)

Table 1. Characteristics of The Population

- Age (years) | Weight (kilograms) | Height (meters) | Body Surface Area (square meters - m2) |
- Mean 51.73 67.33 1.58 1.68
- Mode 51 60.00 1.48 1.80
- Median 52 60.00 1.60 1.60

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In Life Sciences

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