COST EFFECTIVENESS OF MASTECTOMIES OF BRCA1 AND BRCA2 POSITIVE WOMEN OVER OLAPARIB.

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Background

- Breast cancer is the most common type of cancer in women in the United States.[1]
- Approximately 1 in every 500 women will have a mutation on their BRCA1/2 gene, making the risk of developing breast cancer even higher.[2]
- Prophylactic mastectomies are used to prevent cancer before it develops.
- Olaparib is a first-line, targeted therapy for patients with BRCA gene-mutated breast cancer.

Objectives

With limited economic evaluations between these two therapies, the objective of this study was to determine the cost-effectiveness of having a prophylactic mastectomy after finding the BRCA gene mutation or waiting until the development of breast cancer and being treated with guideline-directed therapy such as olaparib.

Methods

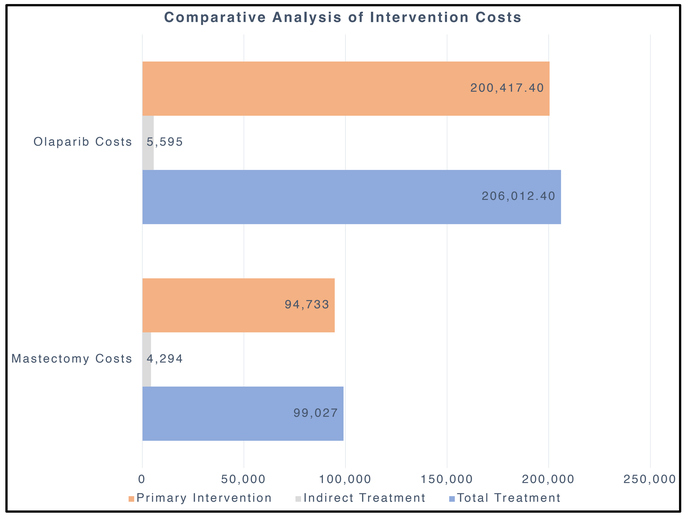
We performed a literature review using PubMed articles from 2010-2023, which reported the cost and life expectancies/mortality benefits of each treatment type. We found the cost of having a prophylactic bilateral mastectomy and the cost of therapy with olaparib after the development of breast cancer and averaging those costs over a QALYs expectancy of 13.8 months. We then compared total and indirect costs with QALYs to determine each therapy's cost-effectiveness.

Results

A bilateral mastectomy with DEIP reconstructions and olaparib increases QALYs by approximately 17.53 years, costing roughly $94,733, and by 1.15 years, costing nearly $14,523 monthly, respectively.[3,5] Based on the average treatment time, if patients continue olaparib throughout their treatment processes, their estimated total cost would be $200,417.40.[4] Adverse effect treatments from olaparib and mammaplasty from a mastectomy have indirect costs approaching $5,595 and $4,294, respectively.[6,7]

Intervention	Cost Per Treatment ($)	QALY (years, months)	Cost for Total Treatment (Cost x Treatment Frequency) ($)
Bilateral mastectomy with DEIP reconstruction	94,733	17.53, 210.36	94,733
Mammaplasty	4,294		4,294
Olaparib	14,523	1.15, 13.8	200,417.40
Olaparib Adverse Effects	405.43	1.15,13.8	5,595
Brachytherapy Radiation Therapy (IRT)	11,261/yr		11,261
External Beam Radiation Therapy (EBRT)	6,375/yr		6,375
Lumpectomy	40,101		40,101

Using data from References, 3,4,5,6, 7, 8, and 9.



Using data from References: 3,4,5,6, and 7.

Conclusion

The cumulative indirect and direct cost of mastectomies is approximately $99,027; comparatively, olaparib treatment is essentially $206,012.40. Secondary costs, such as radiation therapy and lumpectomy, were measured, which would be added to the cost of a chemotherapy treatment if neoadjuvant or adjuvant treatment was necessary.

When reassessing this data, we found some limitations to this study, including potential changes and fluctuations in drug/surgery prices, the relationship of the stage of cancer to the cost, and insurance cost coverage.

With mastectomies regularly occurring proactively and BRCA+ patients having a 45-85% chance of developing breast cancer in their lifetime, a mastectomy seems to be more cost-effective overall than olaparib treatment.

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