Metastatic Breast Cancer: Using Conjoint Analysis to Analyze Patient Preferences

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**KEY QUESTIONS/AIMS OF THE PROJECT**
- How would information from biomarkers influence patient decision making?
- How do patients weigh the risks and benefits of treatment during decision making?

**PROCESS**

- **Grouping**
- **Survey Development**
- **Survey Revision**

- **Data Collection**
  - Using Beyond Breast Cancer (about 200)
  - Pharmacology Center (about 100)
  - Indiana University (about 80)

- **Data Analysis**
  - Report

**DEMOGRAPHICS**

- About two-thirds are married.
- Three-quarters have children, although this includes those with adult children.
- About 60% have no family history or mutation.
- About 90% have a breast cancer diagnosis.
- About 60% have no family history or mutation.
- Each curve has a slightly different shape. For instance, at very low benefit (10%), more is traded off than at low benefit (20% to 40%).
- The shapes of the curves, indicating the reduction in likelihood to treat as benefit and side effect likelihoods worsen, differ. Those considering cardiac side effects are more likely to move towards “no treatment.”

**CONJOINT ANALYSIS**

Conjoint analysis is a specialized market research technique often used to better understand the needs or values of respondents. Conjoint analysis can be used to predict patient interest in biomarkers and a great desire for information.

Patients with metastatic breast cancer face difficult decisions about treatment options and often express frustration, both with toxicity and the feeling of guesswork or trial-and-error.

**SURVEY FINDINGS**

- **Benefit-Toxicity Tradeoff**
  - The chart below shows the predicted likelihood of choosing a treatment with five characteristics specified.
  - As expected, likelihoods are higher for higher benefit or lower toxicity.
  - A benefit-opponent influenced their side effect; selecting treatment dropped more quickly as benefit diminished and more slowly as side effect increased.

- **Preference curves**
  - Preference curves show greater preference for higher benefit and lower side effect likelihoods.
  - About 60% have no family history or mutation.
  - The shapes of the curves, indicating the reduction in likelihood to treat as benefit and side effect likelihoods worsen, differ. Those considering cardiac side effects are more likely to move towards “no treatment.”

**CONCLUSIONS**

This effort has shown a high degree of interest in biomarkers and a great desire for information.

Respondents’ open-end statements express frustration, both with toxicity and the feeling of guesswork or trial-and-error.

Patients are eager for the type of information that biomarkers are intended to provide.

The conjoint model gives us an exciting basis to measure and predict patient decision-making in a rigorous manner.

Conjoint analysis can be used to quantify patient preference with respect to benefit and side effect trade-offs.

Predictions and usefulness will be improved by designing Conjoint Analysis based on specific treatment research questions that have particular side effect profiles.

Biomarker influence can be modeled using conjoint data.

**FUTURE DIRECTIONS**

In the future, we envision:
- Conducting this research with a more representative population (women of color, and women with lower incomes and/or educational levels)
- Varying the severity and duration of the side effect and, perhaps, the type of benefit, to see how the results change
- Designing a conjoint analysis survey with a specific treatment on the basis of the biomarkers to provide more specific benefits and toxicities to test; and, therefore, providing results with more clinical and research applicability