ABSTRACT #6044:

Title: Preferences of Patients with Metastatic Breast Cancer

Background: Patients with metastatic breast cancer face difficult trade-offs between toxicity and efficacy. Techniques from other fields can help us understand trade-off preferences.

Methods: The Research Advocacy Network and GMI acute conducted research using Conjoint Analysis (CA) as part of the ODD Center for Excellence for Individualization of Therapy in Breast Cancer. An online survey was released via three organizations: Living Beyond Breast Cancer, Metastatic Breast Cancer Network, and BCMet cs. Over 400 women answered questions about biomarker tests and questions designed to elicit views on the trade-offs between benefit and side effect. The results were analyzed using CA methods which present pairs of hypothetical treatments, each defined by benefit and side effect. In each question, respondents select a preferred treatment or no treatment. Analysis of patterns allows prediction of selecting treatment for any combination of benefit and side effect.

Results:
- Preference curves show greater preference for higher benefit and lower side effect likelihoods. Range is from 92% for “best” combination (60% benefit, 20% side effect) to 12% for “worst” combination (10% benefit, 40% side effect).
- Benefit appears more influential than side effect; selecting treatment drops more quickly as benefit diminishes and more slowly as side effect increases.
- It is also useful that:
  - Each curve has a highly different shape. For instance, at very low benefit (10%), even a doubling of side effect (from 20% to 40%) has little impact.
  - 40% seems to be an important threshold on both sides. That is, likelihood of taking treatment moves up quite a lot at choices reach 40% likelihood of benefit and as choices get down to 40% likelihood of toxicity.

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 a 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 income 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 as the basis, to provide more specific benefits and toxicities to test; and, therefore, providing results with more clinical and research applicability.

FOR FURTHER INFORMATION CONTACT

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Preference of Patients with Metastatic Breast Cancer: A Market Research Initiative To Understand the Patient Perspective on the Risk-Benefit Tradeoff in the Treatment Decision

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 a conjoint analysis based on specific treatment research questions that have particular side effect profiles.
- Biomarker influence can be modeled using conjoint data.

Benefits-Toxicity Trade-offs as a Predictor of Biomarker Influence

Biomarker Predicting Benefit:
To see how the conjoint model could be used to predict influence, consider a hypothetical biomarker that could predict 30% likelihood of benefit or 50% likelihood of benefit. We used the conjoint model to predict how many patients would change their treatment decision if they knew they would be in the 30% versus the 50% group. First, we ran the model at 40% toxicity, varying the benefit from 30% to 50%. Next, we ran the model at 35% toxicity, again varying the benefit from 30% to 50%.

The model shows anywhere from 19% to 27% of respondents switching from no treatment to treatment as benefit likelihood increases.

Biomarker Predicting Toxicity:
Another hypothetical biomarker predicts toxicity, predicting 30% versus 50% likelihood of side effect. We used the conjoint model to predict how many patients would change their treatment decision if they knew they would be in the 30% versus 50% group. First, we ran the model at 40% benefit, varying the toxicity from 30% to 50%. Next, we ran the model at 60% benefit, again varying the toxicity from 30% to 50%.

The model shows anywhere from 11% to 18% of respondents switching from treatment to no treatment as toxicity likelihood increases.

By including the box representing the choice NOT to have treatment, we are able to estimate the threshold at which a respondent will or will not have treatment. For the objectives of this analysis, we have used the conjoint model to:
- Examine the benefit-toxicity trade-offs in the situation in which only one treatment is available (what percent of respondents are predicted to take the treatment versus not).
- Attempt to mimic the biomarker choices to see what conjoint analysis predicts the impact of the various scenarios (e.g., 30% versus 50%) to be.
- We can also use the conjoint model to see which treatment, if any, a person is expected to choose if more than one is available.

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