San Antonio Breast Cancer Symposium - December 6-10, 2016

Presented December 8, 2016

Genetic Testing for HBOC among Women with a Personal Diagnosis of Breast Cancer in Patients with Medicaid as Compared to Patients with Private Insurance

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BACKGROUND

- Women diagnosed with early-onset breast cancer and/or a strong family history are at risk for Hereditary Breast and Ovarian Cancer (HBOC) syndrome, and the National Comprehensive Cancer Network (NCCN) recommends that these women receive *BRCA1/2* testing to guide treatment decisions.[1]
- Among newly diagnosed patients, a positive test result will often prompt more aggressive surgical treatment to minimize the risk of second primary cancers in accordance with NCCN recommendations.[1]
- Currently, coverage for genetic counseling and testing for HBOC under the Medicaid expansion program of the Affordable Care Act varies by state, where some states require a co-payment for this service and others provide no coverage.
- Similarly, there is no mandate to cover risk-reducing surgery for patients found to carry a genetic mutation despite research showing cost-effectiveness.
- This analysis sought to determine whether genetic testing for HBOC among patients with breast cancer is different for those with Medicaid compared to those with private insurance.

METHODS

COHORT

- A commercial laboratory database was analyzed for women with a personal history of breast cancer who underwent testing with a 25 gene panel between September 2013 and September 2016.
- The panel included *BRCA1, BRCA2, MLH1, MSH2, MSH6, PMS2, EPCAM, APC, MUTYH, CDKN2A, CDK4, TP53, PTEN, STK11, CDH1, BMPR1A, SMAD4, PALB2, CHEK2, ATM, NBN, BARD1, BRIP1, RAD51C,* and *RAD51D*.
- Women were eligible for inclusion if they were between the ages of 18 and 64 at the time of testing and had not undergone previous genetic testing.
- Clinical information was collected from the provider-completed test request form and included personal cancer history, age at diagnosis, and self-identified ancestry.

STATISTICAL ANALYSIS

- Women who were insured by Medicaid at the time of testing were compared to women who were insured by 1 of 5 private payers.
- Descriptive statistics, including means for continuous variables and proportions for categorical variables, were calculated.
- Chi-square tests were used to test associations and differences of positive rates between insurance provider category. Two-tailed p-values are reported, and any p-value less than 0.05 is considered statistically significant.

RESULTS

Figure 1. Distribution of Ancestries According to Insurer

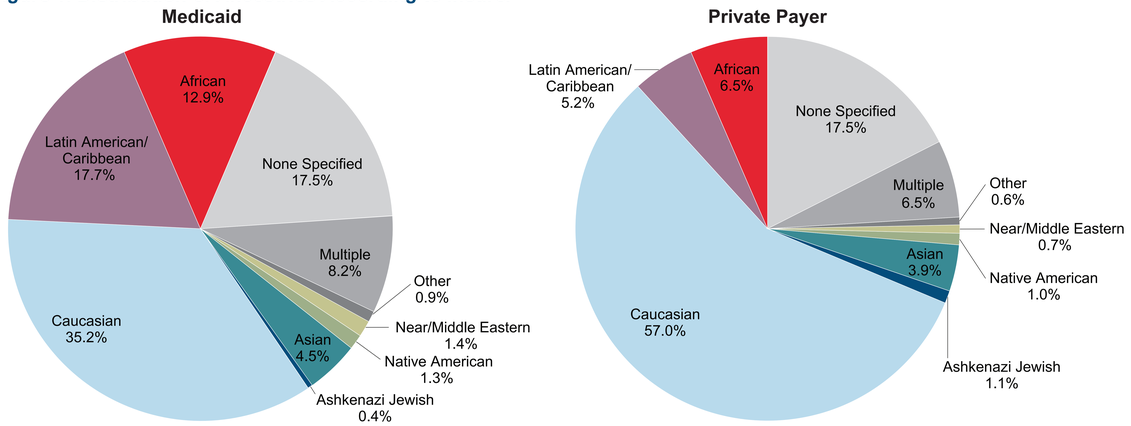
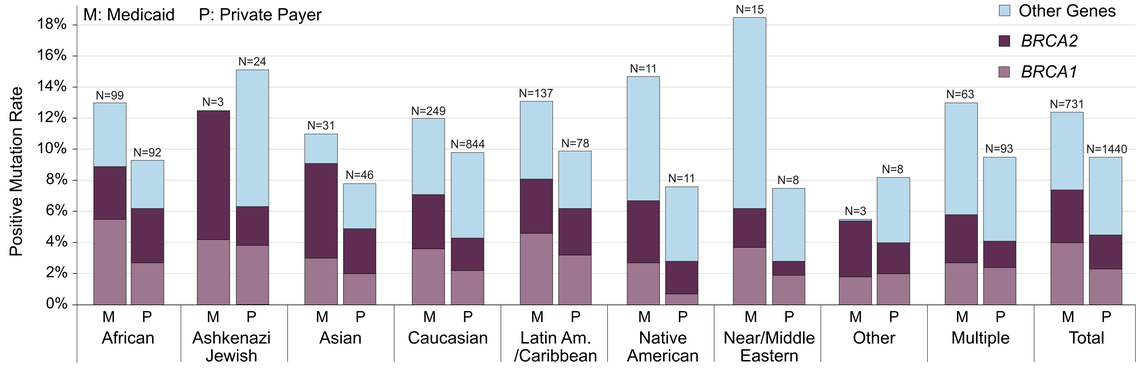


Figure 2. Positive Mutation Rate According to Ancestry and Insurer



Individuals who did not specify an ancestry are not shown, but are included in the total. One individual of Caucasian ancestry covered by Medicaid who had a mutation in both *BRCA1* and *BRCA2* is not included.

- A total of 21,019 women met inclusion criteria.
  - Medicaid: N=5,913 (28.1%)
  - Private Payer: N=15,106 (71.9%)
- Medicaid patients had a median age of breast cancer diagnosis of 45 compared to 47 for patients with private insurance.
- A higher proportion of women with Medicaid were of African and Latin American ancestry compared to women with Private Payer insurance (Figure 1).
  - African: 12.9% (95% CI 12.0, 13.8) vs 6.5% (95% CI 6.1, 6.9)
  - Latin American: 17.7% (95% CI 16.8, 18.7) vs 5.2% (95% CI 4.9, 5.6)
- Overall, 10.3% of tested women were found to carry a pathogenic mutation in one of the genes on the hereditary cancer panel.
  - The positive rate among women covered by Medicaid (12.4%) was statistically higher than patients with private insurance (9.5%) ($p<0.001$) (Figure 2).
  - This was observed for most ancestries, suggesting that the higher overall positive mutation rate was not a result of the differences in ancestry between the two testing populations (Figure 2).

CONCLUSIONS

- The positive mutation rate among individuals with Medicaid was higher than those with private insurance. This discrepancy should be explored to ensure that all appropriate patients have access to genetic testing.
- Consistent genetic testing criteria is necessary among Payors to ensure that all patients receive care in line with guidelines following a breast cancer diagnosis.

REFERENCES

1. Daly M, Pilarski R, Axilbund JE, et al. National Comprehensive Cancer Network: Genetic/Familial High-Risk Assessment: Breast and Ovarian. Version 2.2016.