

# Cancer Risk Assessment and Genetic Testing Implementation and Uptake at a Breast Imaging Site

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## Background

- The American College of Radiology and Society of Breast Imaging recommend that all women be evaluated by age 30 to determine which individuals may benefit from earlier and/or additional breast cancer screening.
- Imaging centers are an ideal setting to provide cancer risk assessment and genetic testing as radiologists screen a high volume of motivated individuals at increased risk for breast cancer.
- The Adventist Health Early All-around Detection (AHEAD) program is a population-based cancer risk assessment and genetic testing program and includes imaging centers.
- In a single breast imaging AHEAD program site, we set out to describe the following:
  - Prevalence of individuals meeting the National Comprehensive Cancer Network (NCCN) criteria for cancer risk genetic testing
  - Interest and uptake rates of genetic testing amongst those meeting criteria
  - Percentage of individuals determined to be at elevated risk for breast cancer (by harboring pathogenic variants or as calculated by the Tyrer-Cuzick breast cancer risk model).

## Methods

- A retrospective consecutive cohort of individuals from one Hawaiian Adventist breast imaging AHEAD screening program was collected between 6/23/2021- 5/1/2022.
- Electronic health record integration and patient risk assessment was obtained from CancerIQ.
- Myriad Genetics performed pre-test patient education and germline genetic testing.
- Results disclosure and care management was performed by an AHEAD program physician.
- Descriptive statistics were used for genetic screening and testing completion rates.

## Results

- Figure 1 shows the AHEAD program point-of-care workflow.
- A total of 1,071 patients completed the clinical and family history screening survey.
- 36.9% of patients screened met NCCN testing criteria (395/1,071 patients) (Figure 2).
- Of patients who were counseled for genetic testing, 69% expressed interest in genetic testing (240/348 patients).
  - The majority (217/240 or 90.4%) completed testing.
- 9 patients were identified as carrying a pathogenic mutation (4.1%; 3 ATM, 1 BRCA2, 1 BRIP1, 1 HOXB13, 2 MUTYH, 1 RNF43 ) (Figure 3).
- Among patients who were eligible for a Tyrer-Cuzick risk calculation (i.e., those who have no prior history of breast cancer), 18.5% had a lifetime breast cancer risk estimate of ≥20% (192/1,039 patients) (Figure 4).

Figure 1. AHEAD Program Point-of-Care Workflow

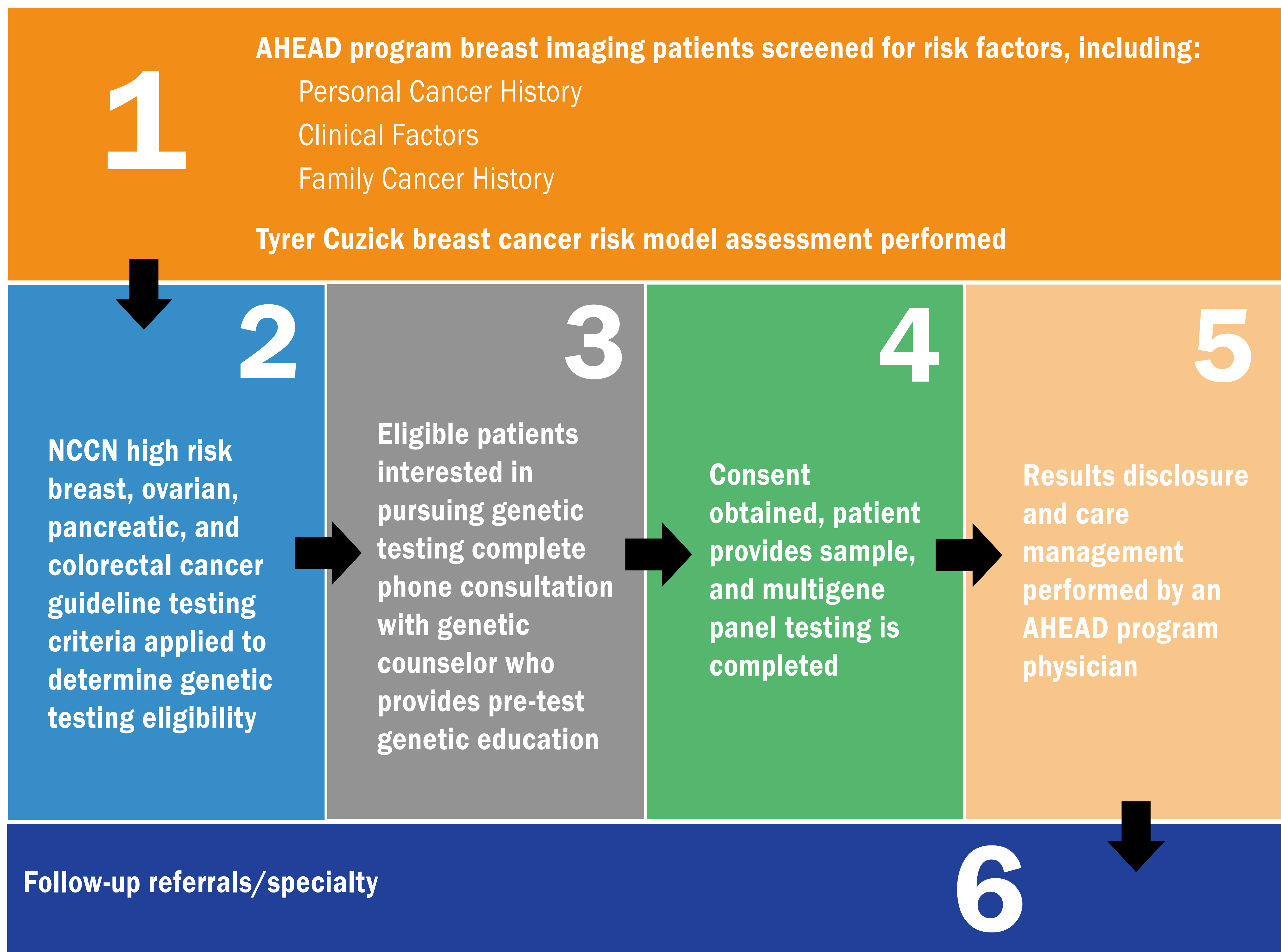


Figure 2. Genetic Testing Criteria

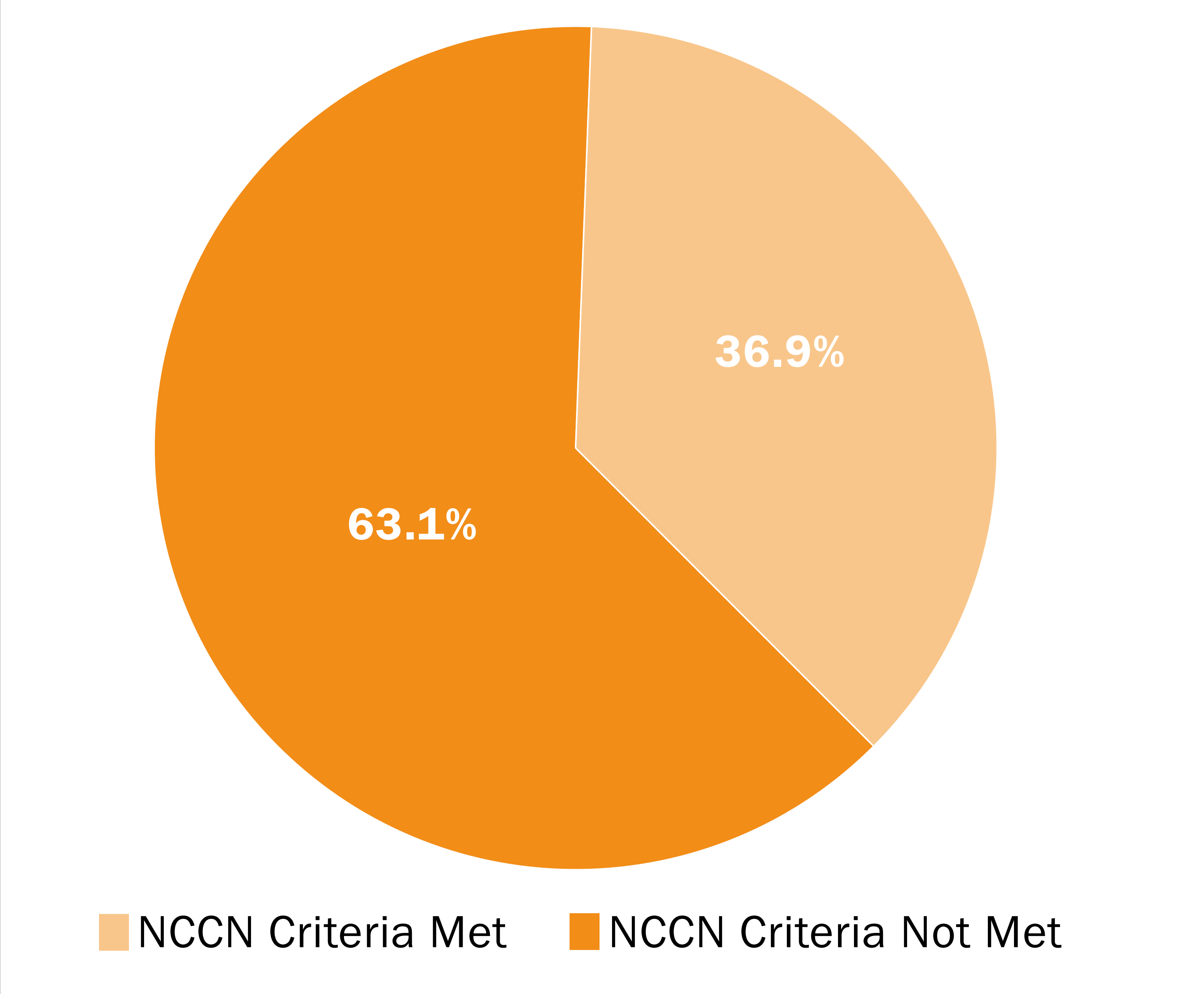


Figure 3. Pathogenic Variants Identified

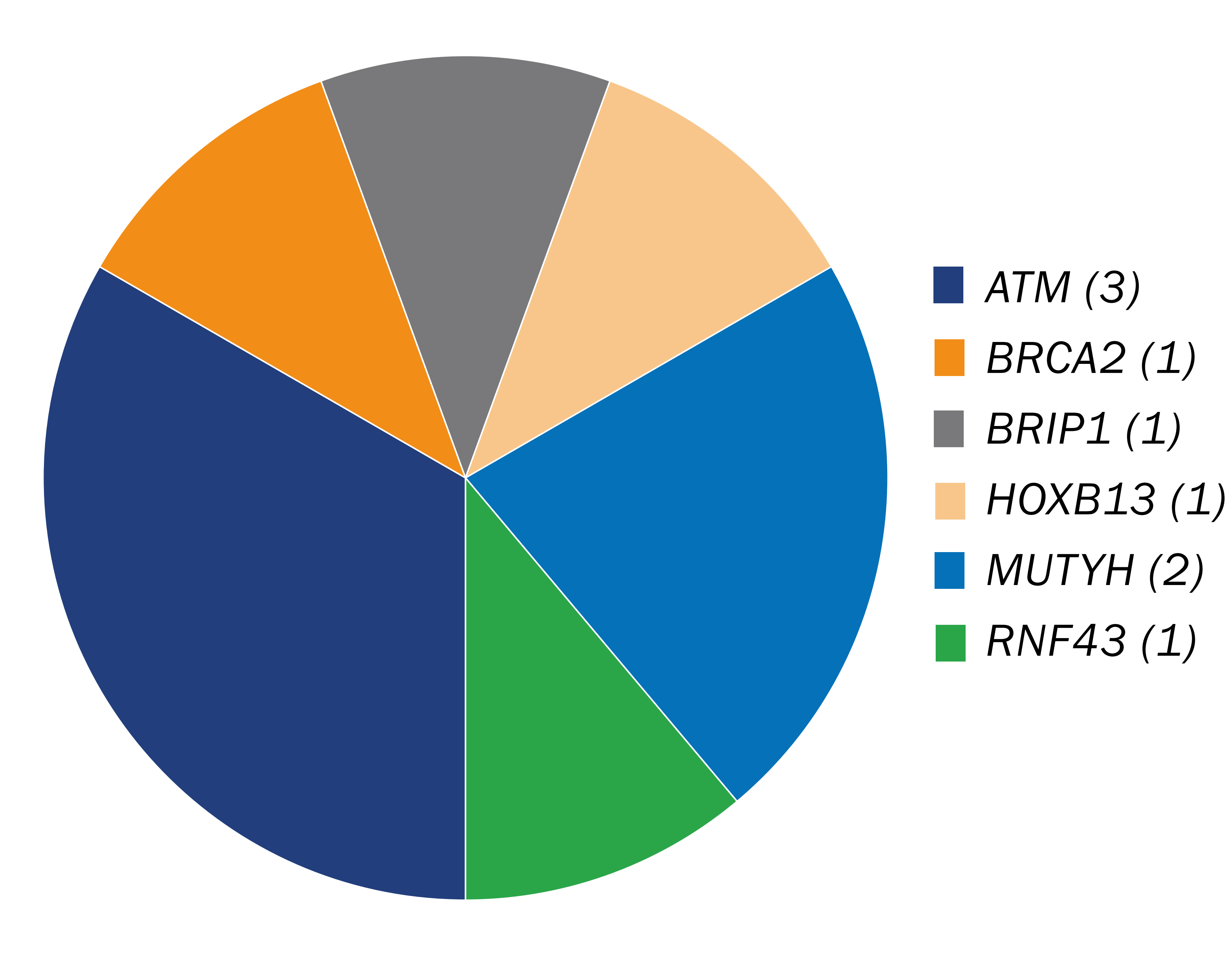
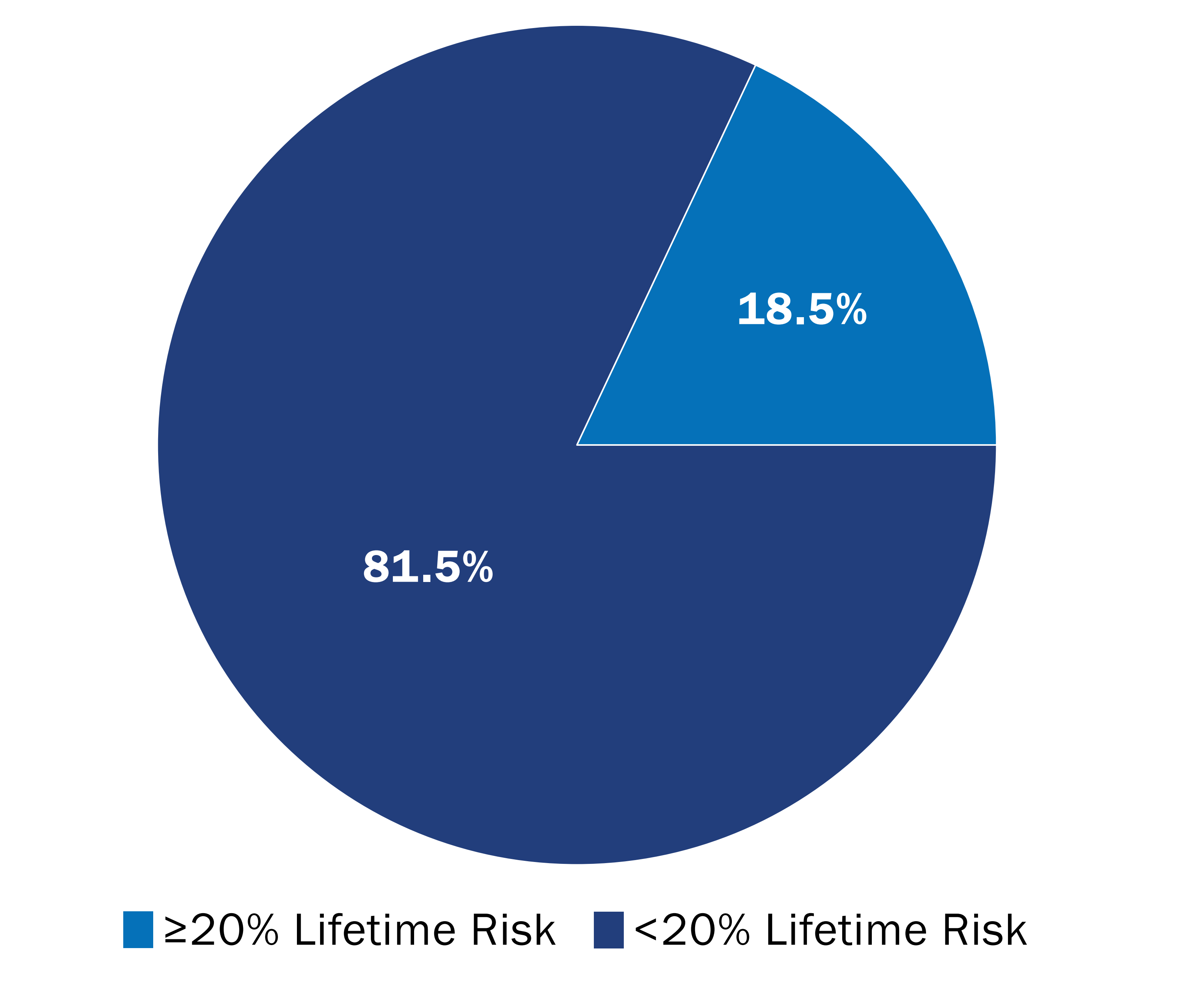


Figure 4. Tyrer-Cuzick Model Lifetime Risk



## Conclusions

- These results from a single AHEAD program breast imaging site suggest that a substantial percentage of individuals are at elevated risk for breast and other cancers, meet national guideline criteria for genetic testing, and are interested in pursuing genetic risk assessment and testing.
- Implementation of similar programs across imaging practices are likely to increase the identification of patients at increased risk for breast and other cancers.
  - These individuals would benefit from supplemental screenings, preventive interventions, and/or targeted treatment, which would inform ongoing patient care.