Abstract #202

Enhancing Breast Cancer Risk Assessment in a Community Imaging Center to Identify High-Risk Patients and Guide Screening and Management

Tammy McKamie, MSN, RN, ACGN, OCN[1]; Tami Hudson, BSN, RN, BHCNm CGRAm CGN[2]; Laura Brzeskiewicz, MS, CGC[1]; Shelly Cummings, MS, CGC[1]

1. Myriad Genetics, Inc., Salt Lake City, UT **2.** Singing River Health System, Ocean Springs, MS

tammy.mckamie@myriad.com

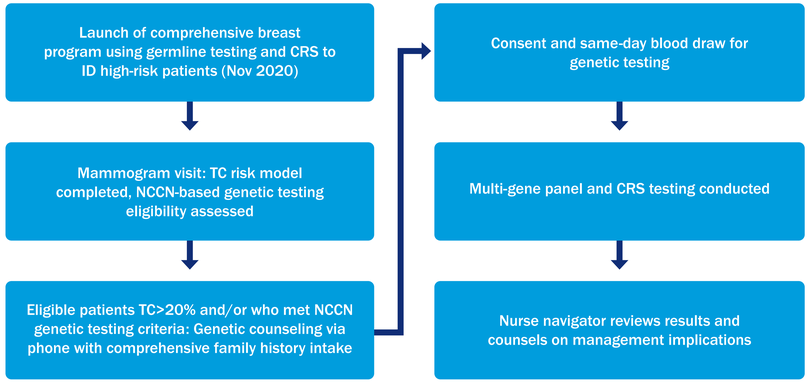
Background

- To assess the effectiveness of Tyrer-Cuzick version 8 (TC) alone versus a combined approach—including family history assessment, germline testing, and TC augmented with a breast cancer multiple ancestry polygenic risk score (MA-PRS)—in identifying patients at elevated risk for breast and other cancers at imaging centers. TC+MA-PRS = Combined Risk Score (CRS).
- Here we compared approaches for identifying high-risk patients to improve personalized screening and management.

Methods

- In November 2020, Singing River Health System launched a comprehensive breast program using the TC risk model and germline testing with CRS to identify high-risk patients. (**Figure 1**).
- During mammogram visits, patients completed the TC risk model and were assessed for genetic testing eligibility based on NCCN guidelines using a cancer history questionnaire (**Figure 2**).
- Eligible patients received a comprehensive family history intake and education by telephone from a genetic counselor and, if consented, had blood drawn for genetic testing the same day (**Figure 3**).
- The testing included a laboratory's multi-gene panel and CRS to determine BC risk and hereditary cancer syndromes (**Figure 4**).
- Post-testing, a nurse navigator reviewed the results and counseled patients on appropriate next steps.
- We evaluated results to identify guideline-recommended management changes and to determine if high-risk patients would have been missed without germline and CRS.

Figure 1. Risk Assessment Clinic Flow Chart



Results

- From November 2020 through December 2023, a total of 2,434 patients completed TC and if they met the criteria for genetic testing at the time of their mammogram, they had multi-gene panel testing and CRS.
- Within this cohort, 677 patients had a TC <20% lifetime BC risk, yet were candidates for medical management change based on their genetic testing, CRS, and/or comprehensive family history results.

Figure 2. Family History Questionnaire

Cancer Family History Questionnaire

Place Label Here

Do **YOU** have a **Personal History** of any of the following?

Updated May 2025	Yes or No	Age at Diagnosis
Breast Cancer diagnosed at age 65 or younger?	___Yes ___No	
Triple Negative Breast Cancer at any age?	___Yes ___No	
Bilateral (two breast cancers) at any age?	___Yes ___No	
Metastatic (stage 4) Breast Cancer?	___Yes ___No	
Ovarian Cancer at any age?	___Yes ___No	
Pancreatic Cancer at any age?	___Yes ___No	
Colon/Colorectal Cancer at any age?	___Yes ___No	
Endometrial Cancer at any age?	___Yes ___No	
10 or more colon polyps in your lifetime?	___Yes ___No	

Have **YOU** been tested for **hereditary risk of cancer?** Yes _____ No_____
(Genetic Testing/ e.g. BRCA or Lynch Syndrome) If so, when:_____ Result:_____

Do you have a **Family History** of any of the following?
(*The following relatives should be considered: Parents, siblings, half-siblings, children, grandparents, grandchildren, aunts, uncles, nieces, nephews, on both sides of the family*)

	Yes or No	Which Relative?	Maternal (Mother) or Paternal (Father)	Age at Diagnosis?
Breast cancer age 49 or younger	___Yes ___No		___M ___P	
2 Breast Cancers in **one** relative at any age	___Yes ___No		___M ___P	
3 breast or prostate cancers in relatives on the same side of family	___Yes ___No		___M ___P	
Ovarian cancer at any age	___Yes ___No		___M ___P	
Pancreatic cancer at any age in parents, children, siblings	___Yes ___No		___M ___P	
Metastatic prostate cancer at any age	___Yes ___No		___M ___P	
Male Breast cancer at any age	___Yes ___No		___M ___P	
Colon or endometrial cancer at age 49 or younger in parents, children or siblings	___Yes ___No		___M ___P	
Ashkenazi Jewish with breast cancer any age	___Yes ___No		___M ___P	
3 relatives on the same side with Colon, Endometrial or other Lynch cancer**	___Yes ___No		___M ___P	

*** Lynch cancers: Colon, Endometrial, Stomach, Ovarian, Pancreatic, Small Bowel, Renal Pelvis, Brain, Sebaceous Carcinoma*

To the best of my knowledge, I have provided the most accurate answers to the above questions.
Patient's signature:_____ Date:_____

FOR OFFICE USE ONLY:
Did patient meet criteria for Genetic Education? ☐ YES ☐ NO ☐ MORE INFORMATION NEEDED
If YES, Patient: ☐ ACCEPTED Video ☐ DECLINED Video: Reason_____
If ACCEPTED, Patient: ☐ SUBMITTED MyRisk ☐ DECLINED Testing: Reason_____
I _____**ACCEPT** or _____**DECLINE genetic testing.**
Patient's signature:_____ Date:_____

Figure 3. Management Changes in Patients with TC <20%

Patients with low risk by TC (<20%) found to be at high-risk by other clinical strategies and eligible for management changes.

Pre-test education

We offer live, point-of-care pre-test sessions to educate your patients about the test you recommend and answer any questions they may have

Myriad's Genetic Counselors will:

- Review patient's family history
- Educate the patient about genetic testing, the recommended test, and the results' impact on medical management
- Email clinic relevant paperwork including a pre-populated test request form and detailed consult note

Patient identified for testing
↓
Patients watches education video
↓
Patient calls GC for pre-test education
↓
GC emails relevant paperwork to practice
↓
HCP obtains patient consent and orders test
↓
Practice collects patient sample
↓
Practice packages documentation and sample for FedEx delivery to Myriad

- Specifically, 70 (10.34%) patients with TC <20% met the criteria for genetic testing and were found to carry pathogenic variants in genes associated with hereditary cancer syndromes.
- Additionally, 133 (19.63%) patients with a TC result <20% were found to have >20% BC risk by CRS.
- Furthermore, 474 (70.04%) patients with TC <20% were eligible for modification of management strategy based on family history information obtained through patient education intake (**Figure 5**).

Figure 4. Multi-gene Panel and CRC

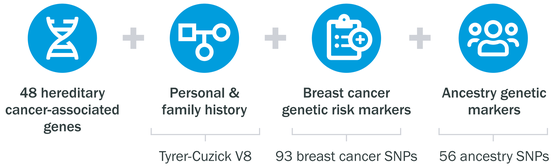
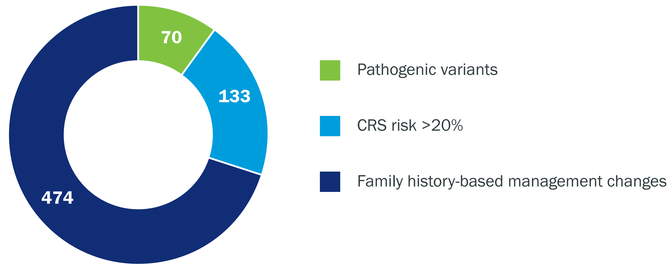


Figure 5. Patients with TC<20% with Management Changes



Conclusions

- A detailed risk assessment and testing program involving TC, a polygenic risk score model, and germline testing at a community imaging center identified more high-risk individuals and suggested alterations in screening and management compared to using TC alone.
- Without this approach, patients at elevated cancer risk requiring management changes would not have been recognized.

Email for questions: tammy.mckamie@myriad.com