Digital Cancer Risk Assessment in a Gynecologic Oncology Clinic

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Background

- Population-based screening for hereditary cancer syndromes is a cost-effective and evidence-based national health priority
- Individuals found to have a hereditary cancer syndrome (e.g., hereditary breast and ovarian cancer and Lynch syndrome) can undergo cancer screening and prevention that can reduce cancer-associated morbidity and mortality
- However, hereditary cancer syndromes are under recognized, with <20% of affected individuals identified
- Health information technology has shown promise in facilitating collection of family cancer history and genetic cancer risk assessment
- **Digital cancer risk assessment tools** are available that harness the power of artificial intelligence and natural language processing

Objective: To evaluate a digital cancer risk assessment tool in a gynecologic oncology clinic for collection of personal and family cancer history, calculation of lifetime breast cancer risk based on the Tyrer-Cuzick (version 8.0) algorithm, and perform risk-stratification based on the National Comprehensive Cancer Network (NCCN®) guidelines for genetic testing

Methods

- Between 11/2022-2/2023, patients presenting for a new gynecologic oncology clinic visit were prompted by text message to complete the digital cancer risk assessment prior to their appointment
- Those using Ambry Genetics Comprehensive, Assessment, Risk, and Education (CARE) Program™ then completed a System Usability Scale (SUS), a validated 10-item questionnaire for the assessment of perceived usability

Results

- 60 patients offered digital cancer risk assessment tool and 43 (72%) completed it

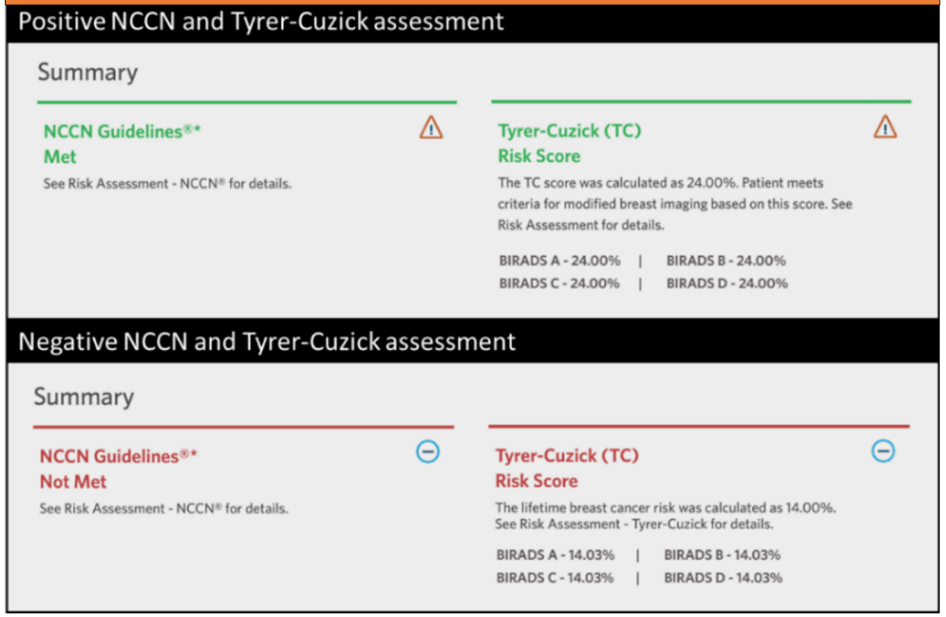
Table 1. Patient Demographics

Median age in years (IQR)	55 (40-68)
Non-Hispanic White	44 (73%)
Non-Hispanic Black	5 (8%)
Asian	5 (8%)
Hispanic	3 (5%)
Other/Unknown	3 (5%)

- 27 (63%) patients met NCCN criteria for genetic testing
- 11 (26%) patients met NCCN criteria for genetic testing and had not had prior testing
  - **Same day genetic counseling** - 11 (100%)
  - **Same day genetic testing** - 9 (82%)
- 9 (21%) patients had a breast cancer lifetime risk score ≥ 20%
  - 9 (100%) referred for enhanced breast screening
- 41 patients (72%) completed SUS
  - Median score of 80
  - Correlating to 85th-89th%
  - Correlating to letter grade of A-

References: Drohan et al. Ann Surg Oncol 2012; USPSTF et al. JAMA 2019; Nelson et al. JAMA 2019; de Jong et al. Gastroenterology 2006; Lourenção et al. Front Oncol 2022; Warner et al. JCO 2011; Bae et al. J Breast Imaging 2020. Li et al. JCO Clin Cancer Inform 2021. Frey et al. Gynecol Oncol 2023.

Figure 1. Digital cancer risk assessment tool patient report



Conclusions

- Implementation of a digital tool for cancer genetic risk assessment identified 26% of patients to be eligible for genetic testing, among whom 82% completed same-day genetic testing and the tool was reviewed favorably by patient users.
- Large randomized controlled trials of health information technology tools in diverse patient populations are needed to move closer to the goal of equitable population-based hereditary cancer risk assessment
- Ongoing trial at Weill Cornell Medicine: Evaluation of a Chatbot to Maximize Hereditary Cancer Genetic Risk Assessment in an Underserved Gynecology Population (NCT05562778)