Title: Enhancing Patient Care: A Digital Approach Improves Universal Breast Cancer Risk Stratification in Imaging Centers

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Background: Identifying individuals at increased cancer risk is crucial for prevention and early breast cancer diagnosis. Integrating a risk assessment tool into imaging centers supports proactive cancer management by combining risk evaluation with immediate diagnostic capabilities. We present over 6 years of data from 15 sites of Midstate Radiology Associates (MRA), where breast cancer risk stratification was implemented and transitioned from paper screening form to a universally accessible digital platform. Our findings demonstrate that a digital approach for breast cancer risk assessment in imaging centers significantly improves the identification of individuals at elevated risk.

Methods: We conducted a retrospective study across 14 MRA Imaging Centers from 2018 to June 2024. From 2018 to 2021, 13 centers used paper forms to screen mammography patients for genetic testing, with TyrerCuzick scores included for those tested. From 2021 onward, patients used the Ambry CARE Program® before appointments to assess lifetime breast cancer risk using the Tyrer-Cuzick (version 8.0) algorithm, determining eligibility for genetic testing based on National Comprehensive Cancer Network (NCCN®) for hereditary cancers (breast, ovarian, pancreatic, prostate), Lynch syndrome, and familial adenomatous polyposis (FAP). We compared outcomes between paper screening and the digital tool, including risk assessment completion, genetic testing criteria met, pursuit of germline testing, positive germline results, and Tyrer-Cuzick scores ≥20%.

Results: During the years paper screening forms were used, there were 168,323 mammogram appointments. Of those, 24.6% (41,424) met criteria for genetic testing based on paper documentation. Among the 12.4% (5,133) who opted for testing, 6% (332) had positive results and 22% (1,133) had a ≥20% lifetime breast cancer risk. Looking into the years a digital screening tool was utilized, 84,122 individuals were invited to complete an assessment, 75.8% (63,749) responded, with 98% (60,438) being females aged 18 or older. At the time of assessment, 26.3% (16,819) met the criteria for genetic testing, and 20.7% (3,489) of these opted for germline genetic testing. Additionally, 1431 individuals who did not meet criteria chose to undergo testing. Among the 4,920 completed genetic tests, 9.6% (470) had positive results, with 46.8% (220/470) influencing breast cancer risk management options. Furthermore, 10.6% (5,984/56,245) of those females without personal history of cancer assessed using the Tyrer-Cuzick algorithm were identified as having a ≥20% lifetime risk of breast cancer, warranting modified medical management.

Conclusion: We observed poor documentation during the period when paper screening forms were used, suggesting that universal breast risk screening was not offered to all patients. This study underscores the benefits