INTRODUCTION

Risk modeling for breast cancer screening is a standard of care in many areas that focus on cancer outcomes. Overall, American women’s lifetime risk of breast cancer (BC) is 1 in 8 or 12.5%. However, due to different environmental, lifestyle, and genetic risks, women have differing risk profiles. Currently, breast experts define above-average risk as 15-26% lifetime BC risk or ≥20%. Risk-assessment for risk-adapted BC screening are often age-based due to lack of access to services that include risk models used in the existing population. Often, high-risk women are not screened appropriately or offered risk reduction strategies. We have developed a manual process for risk assessment that combines lifestyle/biological factors with genetic risks and have instituted this model in our radiology screening program at TOBH since 2018, initially using a nurse navigator to help direct these patients. Women fill out a manual paper questionnaire at the time of the screen, given by the radiology technicians, which answer questions that are then used to calculate a lifetime BC risk score. The model selected for this population is the Ty-Cuzick model version 8b, based on previous data examined at this institution. This calculation requires manual input of all questions answered by patient (15-26) into a website (8b) that estimates the patient’s risk of breast cancer over their lifetime and gives an age-adjusted estimate for the normal woman as well for comparison. This calculation must be done quickly by the radi tech, then included to the reading radiologist to be included in the body of the report now efficiently this is done, has not been examined, but due to the elements of human factors and busy schedules, we anticipate this is not the most efficient process to capture high-risk women. We believe we are not capturing most women who qualify for high-risk and referring them appropriately. We anticipate it is a problem with lack of resources, tools, and lack of efficient communication of this information to the patient. We also hypothesize a program that depends on multiple layers of human communication with the patient is inherently inefficient, as we plan to develop an IBM-based platform that automates this process for the provider and the patient.

PURPOSE OF STUDY

To highlight the outcomes of patients identified as being at high-risk for breast cancer and identify the weaknesses and strengths of the current process, an automated solution could address in the future.

RESULTS

The total number of high-risk patients identified was 68. Of those 68, 23 had successfully been enrolled in high-risk care in the years prior since 2018. Among the remaining 45 women under risk screening mammography from January 1 to June 6, 2023, this year, TOBH screening 4500-5000 women a year on average. Average age for screening is 40 years, with ranges from 40 to 80 years of age. We obtained copies of the names of all women routinely screened for cancer. Patients undergoing diagnostic images were excluded for this study as we knew after the effects of this tools in screening risks, not in women presenting with a known mass or abnormality. To obtain the names of all women presenting with a known mass or abnormality, the women were reviewed for the relevant surgical consults. Women with high-risk at screening identified were tracked and documented every effort to get them referred to proper high-risk screening/hematology. The whole process from mammogram to automated referral was split into 3 stages: notification of high-risk(1), discussion and offered referral(2), and attended high-risk clinic(3). Success and failure at each stage were recorded to determine where the bottlenecks is in our current manual process.

DISCUSSION

Because TOBH is an accredited breast program, it is one of the only hospitals in ECU Health that offers this type of risk assessment tool to all its screening population. TOBH is unique in that it is piloting a risk assessment tool for women, stratifying the risk for BC over a woman’s lifetime and comparing that risk to an age-adjusted control. We found 6-7% of women being screened met criteria for “high risk” as defined by TC model, with lifetime BC risk 20% or higher. Communication of these results to patients was variable. Some results were included by the radiologist in the body of the mammogram report (for the primary care to see), and some reports included the number as a “flag” with no note to the relevance. Some women had already been captured by previous iterations of the screening process, since mammography is often repeated screens every 1-2 years. We noted various correlations with success, and some correlations with failures of communication of this information, which we help us in the development pathway for incorporating this information into an IBM based model later this year. Ultimately, if we learn to repeat the successes, and improve the failures, we anticipate we will better participate in our risk crises once we roll out the automated model in 2023/2024.

CONCLUSION & FUTURE STUDIES

Specifically, at Stage 1, the most common pitfalls were human error and staff lag, which would result in no interpretation of the risk profile to the patient. Additionally, due to delays in getting this data into the chart, providers lacked the proper information to conduct a discussion (Stage 2) with the patient while they were still in their office. This would result in them having to backtrack to call or send a letter to the patient weeks or months after the original. Instead, automated process could instantly populate this value into the chart and notify the provider as soon as the patient enters that data into the questionnaire, which would vastly improve results for stages 1 and 2. Additionally, its reasonable to project that capture rates at the final stage would improve as patients would have an immediate discussion in person with relevant hospital staff. This tool would carry significantly more weight with patients in conveying the importance of their risk profile that a letter or call that arrives weeks after.

MATERIALS & METHODS

We looked at patients screened for BC at TOBH for 6 months for this project to obtain a recent estimate of our successes and failures in documenting high-risk women. 2020 women underwent screening mammography from January 1 to June 6, 2023. Typically, TOBH screens 4500-5000 women a year on average. Average age for screening is 40 years, with ranges from 40 to 80 years of age. We obtained copies of the names of all women routinely screened for cancer. Patients undergoing diagnostic images were excluded for this study as we knew after the effects of this tools in screening risks, not in women presenting with a known mass or abnormality. To obtain the names of all women presenting with a known mass or abnormality, the women were reviewed for the relevant surgical consults. Women with high-risk at screening identified were tracked and documented every effort to get them referred to proper high-risk screening/hematology. The whole process from mammogram to automated referral was split into 3 stages: notification of high-risk(1), discussion and offered referral(2), and attended high-risk clinic(3). Success and failure at each stage were recorded to determine where the bottlenecks is in our current manual process.