

## Care Pathway Development, Implementation, and Assessment to Improve Outcomes in African American (AA) Breast Cancer Patients

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**Abstract:** AA women with breast cancer have worse overall survival compared to white women in the United States, and among major metropolitan cities, Atlanta has one of the worst disparities in outcomes. However, studies have shown that when AA women receive appropriate treatment for inflammatory breast cancer, they do not have significant differences in outcome compared with white patients. Access to care and timely therapeutic interventions are modifiable contributors to this disparity. Clinical care pathways and patient navigation help improve provider and patient adherence to standard therapy recommendations and decrease delays in treatment. We will design clinical care pathways, based on national guidelines, for breast cancer patients seen at the Emory Glenn Family Breast Center (GFBC) and Grady Memorial Hospital's Avon Foundation Comprehensive Breast Center (AFCBC). We hope to improve the outcomes of AA patients who are most at risk for poor outcome in our community. Tumor registry data will be reviewed to determine baseline compliance rates prior to clinical pathway implementation. The hospital healthcare IT departments will work with our current electronic health record systems to integrate care pathways and develop means for monitoring compliance and providing alerts for navigators to intervene to assure appropriate and timely treatment. We will review compliance with the care pathways and need for revision at 6-month intervals. Lastly, we will compare compliance rates prior to and after implementation of clinical care pathways to determine if integration with the electronic health record and nurse navigation improved compliance.

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**1. Reviewer Comments:** Not applicable

**2. Overall Goal and Objectives**

**A. Goal:** The goal of this project is to improve breast cancer outcomes and quality of life among AA and under-resourced breast cancer patients by improving (1) provider and patient adherence to guideline based care and (2) health care delivery consistency at Emory GFBC and Grady AFCBC.

This goal aligns with the intentions of this funding mechanism by promoting guidelines which decrease unnecessary variation in care and access to high quality treatment in a timely manner. As a newly designated NCI Comprehensive Cancer Center, the highest priority of Emory's Winship Cancer Institute is to promote outstanding, multidisciplinary patient care dedicated to reducing the cancer burden on the state of Georgia. Grady Memorial Hospital is committed to the underserved patients of Fulton and DeKalb counties, while also providing care for residents of metro Atlanta and Georgia. Grady's mission is "to improve the health of the community by providing quality, comprehensive healthcare in a compassionate, culturally competent, ethical and fiscally responsible manner." Studies indicate that AA breast cancer patients have worse overall survival than Caucasian counterparts (1-3). However, this disparity is particularly large in metro Atlanta where Grady Memorial Hospital and the Emory Hospitals are located (1, 4). Therefore, the goal of this project is to improve breast cancer outcomes and quality of life among all patients, but with particular focus on AA and under-resourced breast cancer patients. We will achieve this goal through care pathway development, implementation, and assessment. This proposal specifically addresses the priorities and mission of Emory's Winship Cancer Institute and Grady Memorial Hospital.

**B. Key Objectives:**

Among the 50 physicians who treat breast cancer patients at the Emory Glenn Family Breast Center (GFBC) of Winship Cancer Institute and Grady Memorial Hospital's Avon Comprehensive Breast Center (AFCBC), there is variability in practice and adherence to guideline based treatment. In an audit of a recently developed multidisciplinary neoadjuvant chemotherapy care pathway developed at Emory, two metrics fell below 75%, referrals for clinical trials and appropriate referrals to radiation. By achieving the key objectives below, we will be able to develop a robust infrastructure for care pathway development and adherence that is supported by personnel, namely navigators and our electronic health record system. We will develop a system wide program that will decrease unnecessary variation in clinical practice, and assure timely care, especially in our most at-risk patient populations. The key objectives are:

a) To establish a multidisciplinary provider committee including physicians, navigators, and genetic counselors charged with developing diagnostic, treatment, and follow-up care pathways based on NCCN, ASCO, ASTRO, and SSO guidelines for Stage 0-III breast cancer patients at Emory GFBC and Grady AFCBC.

b) To refine the use of genomic assays based on NCCN and ASCO guidelines and to determine the number of genomic assays ordered before and after care pathway implementation

c) To improve access to specialty services (e.g. oncofertility, genetic testing, and reconstructive surgery) and assure that eligible patients are offered such services and receive assessment in a timely fashion using care pathways. We will track the number of oncofertility, reconstructive, and genetics referrals made before and after care pathway implementation.

d) To integrate care pathways into the electronic health record system of Emory and Grady hospitals and develop automated methods to report and evaluate adherence to these care pathways.

e) To train navigators to support and monitor patient and provider compliance with the clinical care pathways.

### **3. Current Assessment of Need in Target Area**

AA women with breast cancer have worse overall survival compared to white women, and among all major metropolitan cities, Atlanta was recently found to have the worst racial disparities for breast cancer (1). Studies conducted by Emory University epidemiologists confirm that AA patients in Atlanta are more likely to have delays between breast cancer diagnosis and treatment and are less likely to receive adjuvant radiation and hormone therapy when clinically indicated (5). Furthermore, among Atlanta patients with tumors eligible for 21-gene recurrence score testing, white women are twice as likely to receive testing versus AA women (41% vs. 20%,  $p < 0.001$ ). White women with high recurrence scores also receive both the recommended chemotherapy and hormone therapy more often than AA women (93% vs. 58%,  $p = 0.02$ ) (6). Nevertheless, we showed that when AA women receive appropriate treatment for inflammatory breast cancer, they do not have significant differences in outcome compared with white breast cancer patients (7). While outcomes in breast cancer may be attributed to many factors including biological causes (e.g. higher incidence of triple negative breast cancer in AA women), our studies also indicate that access to care and timely therapeutic interventions are modifiable contributors to the significant problem we see in our community.

The AFCBC at Grady Memorial Hospital and the GFBC of Winship Cancer Institute at Emory University are both comprehensive, multidisciplinary breast care programs. Our proposal is aimed at enhancing services for all patients served within AFCBC and GFBC but will greatly impact and improve the quality of care for AA, minority, and/or under-resourced breast cancer patients served by the two above mentioned healthcare systems. Emory faculty physicians staff both the AFCBC at Grady and the GFBC at Winship. The AFCBC primarily serves AA patients, where approximately 81% of all newly diagnosed breast cancer patients are AA, and 80% are indigent, uninsured, or Medicaid only recipients. The Emory GFBC serves approximately 1,100 patients annually; 45% are AA and 15% are insured by Medicaid or are uninsured. Both the GFBC and AFCBC use a multidisciplinary team approach to bring together experts in medical, surgical, and radiation oncology, genetics, plastic surgery, radiology, and pathology. In partnership with the AFCBC, the GFBC conducts state-of-the-art clinical trials, bio-specimen banking, and extensive clinical, translational, and basic science research.

From the above studies conducted by Emory epidemiologists, it is clear that a significant number of AA breast cancer patients do not receive standard of care treatment in a timely manner in Atlanta (5). Two major factors, care pathway implementation and the use of navigation, have successfully been shown to improve treatment compliance and adherence (8-11). Care pathways provide treatment consistency across systems, allow for treatment adherence and lead to improved quality of care (12-16). Care pathways, not only improve patient adherence to treatment, but can also help clinicians stay abreast of rapidly changing breast cancer guidelines and offer a framework for clinical decisions (17). In addition to care pathways, navigators also play a pivotal role in keeping patients within the hospital system. In some studies, those patients who were treated with the use of nurse navigation had lower treatment wait times and increased satisfaction with their care (18, 19). In fact, a recent Emory study showed that navigation significantly decreased the time between diagnosis and initial treatment consultation in patients above the age of 60, particularly AA women (20).

Given this background, Emory breast cancer physicians felt that care pathway development in combination with enhanced navigation services supporting such pathways could help providers and patients achieve consistent, guideline based treatment in a timely manner. Last year, Emory breast physicians developed and implemented their first multidisciplinary care pathway focused on patients who receive neoadjuvant chemotherapy (NACT), a treatment paradigm which relies heavily on strong, system wide integration and cohesion (Appendix A). The pathway was based on NCCN, ASCO, ASTRO, and/or SSO guidelines. A manual audit was conducted to review our compliance with NACT (e.g. pre-treatment staging work-up, referral to oncofertility, genetics, reconstructive services, and adjuvant treatments, as well as discussion of clinical trial eligibility). Compliance with the NACT pathway was above 75% for every metric assessed except for discussion of clinical trials and adjuvant radiation referrals. This pathway has not been implemented at Grady AFCBC, and further components of multidisciplinary clinical care need to be created and audited (e.g. pathways for non-NACT Stage 0-III breast cancer patients and refinement of our policies regarding 21-gene recurrence score testing). Nevertheless, awareness of the variation in our practice has helped to improve our compliance with the NACT pathway, as a second manual audit recently showed that discussion of appropriate clinical trials and referral to radiation increased by 10% after releasing the initial audit results. We believe that additional multidisciplinary care pathways for Stage 0-III patients who do not receive NACT, supported by navigation and enhanced information technology (IT) services, will have the same beneficial effects on our providers and patients.

#### **4. Target Audience**

Each year, physicians at Emory GFBC and Grady AFCBC treat 1100 and 150 non-metastatic breast cancer patients, respectively. The Cancer Center Directors of Winship Cancer Institute (Dr. Walter Curran) and Georgia Cancer Center of Excellence at Grady Memorial Hospital (Ms. Pooja Mishra) are in full support of the proposed work and have guaranteed complete access to all breast cancer patients seen and treated within their systems. The Department Chairs of Radiation Oncology (Dr. Walter Curran), General Surgery (Dr. John Sweeney), and Medical oncology (Dr. Sagar Lonial), have also written letters of support committing their faculty to care

pathway development and implementation. Christine Stanislaw, Director of Genetic Counseling, and Drs. Grant Carlson, Chief of the Division of Plastic Surgery, and Heather Hipp, lead oncofertility specialist in the Department of Obstetrics and Gynecology have agreed to support clinical care pathway implementation by evaluating appropriate patients in a timely fashion.

The Chief Medical Information Officer of Emory Healthcare, Dr. Julie Hollberg and Medical Director of Clinical Informatics at Winship Cancer Institute, Dr. Rebecca Klisovic are committed to this proposal and will provide direct oversight over the computer programmer and developer (TBD) who will work to integrate the care pathways into the electronic health record. This programmer will be charged with developing an automated system, with tracking and reporting capability, thus facilitating navigator intervention when there are deviations from the care pathway. In addition, Winship's Vice President of Cancer Services, Melissa Childress, has committed the lead breast center navigator, Catherine Beaver, as the project manager. She will work with physicians on the multidisciplinary care pathway development committee and then train other navigators and staff to assure proper implementation of care pathways. There are currently 9 nurse navigators at Emory GFBC who are responsible for coaching patients through the care continuum. At Grady AFCBC, there are 8 lay navigators (minority breast cancer survivors) who have received extensive training and provide education and psychosocial support services to newly diagnosed patients and their families. Use of these navigators at Grady has improved appointment and treatment compliance, patient quality of life, and access to psychosocial resources. It is expected that these navigators will play a key role in implementation of the care pathways at Grady AFCBC. Catherine Beaver will be charged with training navigators at both Emory's GFBC and Grady's AFCBC.

According to the 2010 U.S. Census, AAs comprise 54% of the population of Atlanta (21). All breast cancer patients will benefit from the proposed project, but due to patient demographics within the city of Atlanta, as well as the counties primarily served by Emory and Grady, this proposal will directly impact a large proportion of AA and/or under-resourced patients served within the city of Atlanta. As stated previously, these patients are at the highest risk of treatment delays due to several factors pertaining to patients, providers, and the healthcare system (5, 22). The intended audience of this project is any patient with Stage 0-III breast cancer treated within the Emory and Grady breast cancer programs. This project is specifically intended for those patients who have several multidisciplinary healthcare needs (e.g. various providers, appointments, tests and referrals). It is these patients that have the highest likelihood of missing appointments, either due to provider (e.g. lack of referral) or patient (e.g. patient missed appointment) oversight or nonadherence to recommended guidelines. There are several timepoints that will be identified during a patient's treatment course that will serve as "checkpoints," to assess whether patients are receiving guideline-based treatments in a timely manner. Navigators will be charged with intervening when there is a deviation in the care pathway at each checkpoint.

As mentioned previously, this project has the potential to impact a large proportion of AA patients in our community, as the Emory GFBC and Grady AFCBC serve a large number of these

women. The additional commitment for patients will be minimal. We will ask patients to voluntarily complete two quality of life questionnaires before and after pathway implementation (Please refer to project design section for details). Patients will still be able to participate even if these questionnaires are not completed. By creating infrastructure for care pathway development and implementation, the proposed work will address challenges with access and timely treatment. The work will also facilitate clinical trial referrals to address tumor biology. Dr. Sagar Lonial, Chair of Winship's Clinical Council notes that a primary focus of Winship is to integrate and standardize patient care across the hospital system. This proposal brings Winship closer to that goal and significantly enhances the work in breast cancer but also sets the stage and establishes a platform for care pathway development in other disease sites at Winship and Grady. Finally, Dr. Torres, study co-PI, is a co-leader of the Greater Atlanta Breast Cancer Task Force which brings together breast cancer physicians from 5 different hospital systems in Atlanta. Successful care pathways developed at Emory and Grady will be shared and dispensed through this community task force to other Atlanta hospitals, creating a much broader impact on our community.

## **5. Project Design and Methods**

The goal of this project is to improve breast cancer outcomes and quality of life among AA and under-resourced breast cancer patients by improving provider and patient adherence to guideline based care and health care delivery consistency at Emory GFBC and Grady AFCBC. To achieve this goal, the project will be conducted in three distinct phases:

### **Phase 1**

*a. Creation of care pathways:* Care pathways based on stage and receptor status will be created using the following resources: National Comprehensive Cancer Network (NCCN), American Society of Clinical Oncology (ASCO), American Society of Radiation Oncology (ASTRO), and Society of Surgical Oncology (SSO) guidelines. Findings from relevant trials and studies will also be referenced in the development of the pathways. A multidisciplinary committee of breast cancer providers will be formed including the study co-PIs Drs. Subhedar and Torres, the lead project manager and nurse navigator, Catherine Beaver, as well as medical oncologists, surgical oncologists, radiation oncologists, radiologists, plastic surgeons, geneticists, oncofertility specialists, and pathologists. This multidisciplinary committee will meet biweekly over a 6-month period. As care pathways are developed, they will be disseminated to other clinicians for feedback, revised as needed and given to the lead nurse navigator to begin navigator training. Care pathways will be developed for Stage 0-III breast cancer patients who are not receiving NACT, as this pathway has already been developed. Each pathway will include the following elements:

- Timelines for diagnostic work-up (e.g. mammograms, staging studies, Her2 reporting)
- Timelines for treatment (e.g. time from initial diagnosis to initiation of primary treatment)
- Standards for ordering 21-gene recurrence score testing and guidelines regarding when it should be ordered and by whom (e.g. considering tumor size, tumor characteristics and age when ordering test)
- Timelines for adjuvant treatment appointments (radiation oncology, medical oncology)
- Guidelines regarding referrals to specialty services and appropriate timelines (oncofertility,

genetics, and reconstructive surgery)

- Guidelines for determining clinical trial eligibility
- Guidelines regarding follow-up schedule after completing active treatment and timelines for follow-up surveillance imaging

\* Refer to Figure 1 for a sample of our previously created and implemented NACT care pathway and associated checkpoints. The Stage 0-III study care pathways will be modeled after the NACT pathway. Checkpoints will be converted to automated alerts in the electronic health record. Clinicians and navigators will be alerted when a patient is at risk for treatment non-compliance. These patients can then be contacted to assure or enable treatment adherence.

*b. Assessment of workflow consistency and adherence:* To assess whether treatment consistency and adherence improved with standardizing and automating care pathway checkpoints, we first will have to establish our baseline compliance rates prior to implementation of our proposed pathways. Tumor registry data in the year prior to this study (2016 CoC and NAPBC audit data) will be used to assess compliance with Commission on Cancer (CoC) and NAPBC standards to establish baseline compliance rates prior to clinical pathway implementation. Compliance rates for various treatments before pathway implementation will be compared with compliance rates after pathway implementation.

Phase 2 -Training of navigators: As the care pathways are finalized, they will be distributed to members of Emory GFBC and Grady AFCBC to incorporate into their workflow. Catherine Beaver will be responsible for training the 8 additional nurse navigators at Emory as well as the 8 lay navigators at AFCBC regarding the “checkpoints” that the navigators will be monitoring. The pathway process is meant to be fluid and iterative. Changes to the pathways will be made as necessary throughout the study period.

Phase 3 – Integration of care pathways with electronic health record (EHR): The Emory Healthcare IT department will work with our current electronic health record (EHR) system to integrate care pathways into the EHR. In addition, the IT programmers will develop means for monitoring compliance and providing alerts for the care team when patients are not receiving referral appointments and treatments in a timely manner. The integration of alerts into the EHR will continue as a feature of the EHR and thus will provide a sustained benefit, even after project completion.

We will determine if patients and physicians are fully engaged in the project by the level of compliance with care pathways. We will also assess feelings of patient empowerment and patient quality of life using the Health Education Impact Questionnaire and the Medical Outcomes Study 36-Item Short Form (Version 2), respectively, before and after completion of the pathway to determine if these measures improved with the use of the care pathways (23, 24). Patient completion of these questionnaires will be encouraged, but not mandated.

Innovation: This project is original in that it directly addresses the pervasive problem of health disparities among AA breast cancer patients by developing care pathways to enhance access, care, timely compliance with treatment, and referrals to clinical trials. The proposed work has

the potential to improve multidisciplinary care among all breast cancer patients, but particularly AA patients within our community who are less likely to receive standard of care treatment and experience delays in therapy. We already have a multidisciplinary breast cancer clinical care pathway committee, and we will utilize this committee, in addition to navigators, to create care pathways for non-NACT Stage 0-III breast cancer patients. In addition, we have completed a neoadjuvant therapy compliance audit and found that there were elements within our system that could improve. In our current system, patients are reminded of their specialty-specific follow-up appointments when seen by an individual provider. There is neither a mechanism in place to make sure that a referral is made, nor is there a way to know if a patient misses a necessary appointment apart from a manual check. There is no automated system to alert all team members when a patient has not been seen for an adjuvant appointment in a timely fashion. Unfortunately, this system leaves room for human error. By creating care pathways, with pre-defined treatment “checkpoints,” clinicians and navigators can quickly search to make sure that these benchmarks are being completed. Moreover, by integrating these reminders into the electronic health record (EHR) system, another feedback mechanism is set up to further ensure that patients receive the care they need, enhance the quality of care received, and improve overall breast cancer outcomes. Several studies have shown that using care pathways in oncology leads to quality improvement, but no studies have used automated alerts to inform the entire treatment team when a patient deviates from the care pathway. The innovation of this project lies in the integration between pathway implementation, navigation support and an enhanced IT solution in the electronic health record (EHR) system.

If successful, the care pathways, will be made publicly available on our breast center website, enabling patients and external providers access to these pathways for potential implementation at their home institutions.

## **6. Evaluation Design**

Compliance data before and after care pathway implementation will be compared to assess whether guideline-based pathways increased provider adherence to treatment recommendations and patient adherence to treatment. We performed a limited audit of the 2017 third quarter data collected by our tumor registrars, 87% of breast cancer patients below the age of 70 receive radiation within 1 year following lumpectomy. Furthermore, 72% of patients with four or more positive lymph nodes receive post mastectomy radiation. Our goal would be to improve these metrics to meet the CoC standard of 90% through care pathway development and enhanced navigation and IT support.

Additional pre-pathway practice gaps will be determined from Emory and Grady Cancer registries. The data will be stratified by race into AA and non-AA breast cancer patients. For those metrics which fall below 65%, we expect to improve our compliance to meet CoC and NAPBC standards, as well as to improve our compliance with clinical care pathways by 10% over a 2 year period. Post-pathway practice gap data will be collected from reporting software developed by the computer programmer. Compliance with treatment checkpoints will then be assessed. In the analysis, data will be stratified according to race to determine improvements in AA vs. non-AA patient compliance rates with CoC and NAPBC standards and our care

pathways. If CoC and NAPBC standards are met and the practice gap of care pathway compliance improves by 10% over 2 years, this study will be considered successful.

### Statistical considerations

*Power and sample size:* With 1250 patients (1100 Emory and 150 Grady) evaluated for compliance, we have >99% power to detect a 10% improvement in compliance rate for a given metric from 65% to 75%, assuming a Type I error of 0.05 using an exact binomial test.

*Statistical analysis plan:* Descriptive statistics will be generated for patients using mean, standard deviation, and range for numeric variables and frequencies and percentages for categorical variables. Compliance rates will be estimated for each metric, and 95% confidence intervals will be reported using the Clopper-Pearson method, both for the overall sample as well as stratified by racial group (25). Metric compliance rates will be compared to their historical estimates using exact binomial tests, both overall and stratified by racial group. Each metric compliance rate also will be compared across racial groups using a chi-squared test. Multiple comparisons will be handled using a Bonferroni correction. In addition, mean scores on the Health Education Impact Questionnaire and the Medical Outcomes Study 36-Item Short Form will be compared before and after care pathway completion and will be stratified by race. Statistical analyses will be performed using SAS 9.4 (SAS Institute Inc., Cary, NC), and statistical significance will be established at the 0.05 level.

Once the personnel and technical infrastructure are established to support the designed clinical care pathways, resulting in improved provider and patient compliance rates, this study will be considered to have positive results and the findings will be widely disseminated to several groups in the metropolitan Atlanta area. The findings from the project will be communicated with non-Emory faculty (e.g. Morehouse University physicians who participate in joint tumor boards with Emory physicians at Grady Memorial Hospital) and community breast physicians who staff several hospitals under the Emory umbrella. Furthermore, Dr. Torres, co-PI on this proposed project, is one of the leaders of a community wide task force involving 5 different healthcare systems in the Atlanta area designed to address disparities in AA breast cancer patients. If findings from this work indicate that clinical care pathways help to improve treatment time intervals as well as adherence to treatment, the clinical care pathways will be shared with leaders of this task force to encourage community wide dissemination.

## **7. Workplan and Deliverables Schedule**

Months 1-6 (corresponding to Phases 1 and 2 of project) Creation of stage-specific care pathways: Drs. Subhedar and Torres, multidisciplinary clinicians, and nurse navigators will meet bi-weekly to discuss components of the care pathways and to establish care pathway “checkpoints”. As each care pathway is completed it will be disseminated to breast center clinicians, revised as needed, provided to Catherine Beaver for navigator training and submitted to the IT department to begin integration into the EHR. As subsequent pathways are completed, they too will be given to navigators for training and to the IT programmers. It is anticipated that at the end of Month 6, all three care pathways will be completed and all navigators will be trained with regards to the “checkpoints.” IT integration will begin during this time, but will be fully completed by Month 10. Lastly, during Months 1-6, baseline practice gap

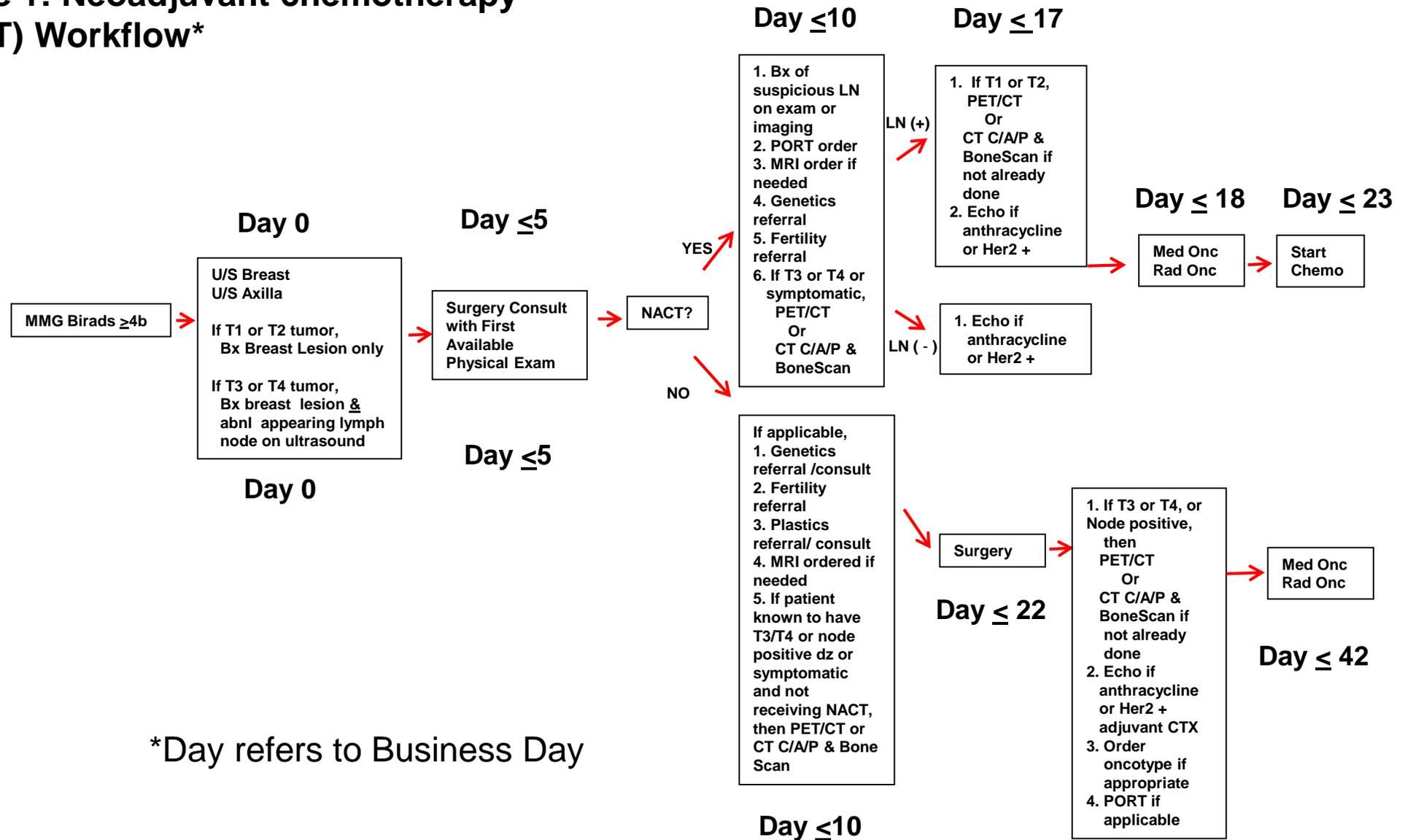
information from the cancer registry will be assessed to establish baseline compliance data prior to pathway implementation.

Months 7-10 (corresponding with Phase 3 of project) Integration of care pathways into the electronic health record (EHR): Integration of pathways into the EHR will begin as soon as a pathway is approved by the multidisciplinary committee. This process will begin during Months 1-6, and it is anticipated that all three pathways will be fully integrated into the EHR by Month 10. A small feasibility study will be conducted to determine where adjustments are needed in the care pathway and in its implementation.

Months 11-24 (corresponding with Phase 3 of project) Establishment of care pathway compliance after IT integration: Once the pilot is complete and appropriate revisions are made, the care pathways will be fully integrated into the care of all breast cancer patients at Emory and Grady. We anticipate that Year 2 of the project will be devoted primarily to utilizing the care pathways within an integrated navigator and IT framework. When patients do not meet pre-defined checkpoints in the care pathway, navigators will contact providers and patients to determine why (e.g. no referral was made, or patient did not keep appointment), attempt to remedy the situation, and encourage providers and patients to continue on the recommended care pathway. Compliance with treatment checkpoints will be calculated at months 18 and 24. These compliance rates will be compared with baseline measures, and it is anticipated that adherence to the pathways will improve and achieve our overall goals. Once the care pathway committee, navigator, and IT infrastructure have been established, iterative adjustments in the care pathways will be made every 6 months even after the study has concluded. We, therefore, anticipate that this program will have a sustained, long-lasting positive impact on breast cancer patients in our community.

<b>Deliverable Item</b>	<b>Months 1-6</b>	<b>Months 7-10</b>	<b>Months 11-24</b>
<i>Phase 1: Pathway Creation</i>			
Bi-weekly multidisciplinary committee meetings to create care pathways	X		
Determine baseline compliance with CoC and NAPBC standards prior to pathway implementation	X		
Dissemination of care pathways to clinicians and implementation into workflow	X		
<i>Phase 2: Navigation Training</i>			
Navigator training	X		
Review and revision of care pathways (as needed)	X	X	X
<i>Phase 3: Pathway Integration</i>			
Integration of care pathways into the electronic health record (EHR)		X	
Pilot study to assess initial pathway feasibility		X	
Fully implement care pathways at Emory GFBC and Grady AFCBC			X
Determine compliance rates with care pathways after IT integration			X

**Figure 1: Neoadjuvant chemotherapy (NACT) Workflow\***



\*Day refers to Business Day

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