Breast Cancer Referral And Screening Rates In A Federally Qualified Health Center: Implementing The Point Of Care Integrated Breast Cancer Screening Model

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Breast Cancer Referral and Screening Rates in a Federally Qualified Health Center: Implementing the *Point of Care Integrated Breast Cancer Screening Model*

Submitted to the Faculty
Yale University School of Nursing

In Partial Fulfillment
of the Requirements for the Degree
Doctor of Nursing Practice

Jill Crawford Muhrer

May 23, 2016
This capstone is accepted in partial fulfillment of the requirements for the degree Doctor of Nursing Practice.

Sincerely,

Dr. Lois Sadler, PhD, PNP-BC, FAAN

Date  March 17, 2016
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Signed: [Signature]

Date: March 17, 2016
Breast Cancer Referral and Screening Rates in a Federally Qualified Health Center: Implementing the Point of Care Integrated Breast Cancer Screening Model

Jill C. Muhrer

CASE IN POINT:
Marta is a 52-year-old uninsured mother of 3 children who only comes into the community clinic when she is ill. Her priority is her children, and she rarely finds time to care for herself especially since she works as a housekeeper while her children are at school. She recently went to the emergency room for shoulder pain where she was diagnosed with tendonitis.

Rachel has been Marta’s nurse practitioner for years. She knows that Marta only comes in for urgent issues and frequently reminds her to schedule her physical. She sees Marta for follow up of her tendonitis, which has improved. She knows that Marta is due for her mammogram but assumes that her gynecologist has ordered it. She is hesitant to prolong the visit with preventive issues because she is running late, and Marta has to get home to her children.

Later that month Marta’s gynecologist treats her for vaginitis and advises her to schedule her annual because she is overdue for her pap and mammogram.

When Marta returns with worsening shoulder pain, Rachel does a breast exam, and discovers a mass. She schedules her for an emergency mammogram, an appointment with a surgeon and is devastated to learn that Marta has metastatic breast cancer.

BACKGROUND AND SIGNIFICANCE
Breast cancer is the most common cancer and the second leading cause of cancer death in women in the United States\(^1\). In 2016, it is estimated that 246,660 women will develop breast cancer and that 40,450 will die from it.\(^1\) Mammograms, by providing early detection, reduce cancer related mortality by 20% for women of average risk.\(^2\) Despite the effectiveness of screening, in 2013 only 65.9 % of women aged 45 and above had completed a mammogram within 2 years.\(^3\) Mammogram utilization is lowest among low-income (56.3%), uninsured women (39%), racial and ethnic minorities (60.8-69%), women with a limited education (56%), and women without a primary care provider
The consequences of not screening include delayed diagnosis, limited treatment options, and decreased survival. 7,8,9

While breast cancer screening is a high priority, studies demonstrate that between 66-80% of eligible women report not receiving mammogram recommendations from their clinicians. 10,11 Among low-income minority women with poor access to medical care, the single most important factor cited for improving mammogram rates was clinicians’ recommendations. 12,13,14,15 Even when women have full insurance coverage, Medicare beneficiaries report a combination of inadequate information and lack of provider recommendations as reasons for not obtaining mammograms. 16 In fact, four out of ten women are not even aware that screening is covered under their plans. 6 Even when Medicaid programs cover screening, Medicaid beneficiaries are less likely to be screened than those with other types of insurance. 6

Federally qualified health centers (FQHC) provide comprehensive primary health care to patients with Medicaid and to all people regardless of ability to pay and therefore, offer critical safety net services to an underserved population. 17 Facilitating contact with a health care provider through increased reimbursement for office visits improves screening rates in the Medicaid population. 8 In a recent study, researchers noted that when office visits were increased by 20%, there was a 2.2% increase in breast cancer screening rates. 8 This improvement was not associated with increased insurance coverage, which only demonstrated inconsistent and minor improvements in breast cancer screening. 8 The researchers conclude that funding office visits may be a more effective policy tool for improving cancer screening than screening test reimbursements. 8
The barriers that may interfere with health care providers making mammogram referrals in FQHCs include competing priorities, high patient loads, limited resources, a focus on acute care, and inadequate health insurance coverage. Therefore, despite good intentions, preventive care is often overlooked, which contributes to the gap between recommended practice guidelines and their implementation.

CONCEPTUAL FRAMEWORK AND PRACTICE MODELS

In order to align preventive practices with clinical recommendations, the Institute for Systems Improvement and the Healthy People 2020 Task Force designate breast cancer screening as a high priority. Furthermore, they recommend improving screening rates by using evidence-based culturally appropriate, and patient-centered interventions to improve screening at ALL clinic contacts regardless of whether the visit is for acute, chronic, or preventive services. Kaiser Permanente (KP), a large managed care organization has implemented this proactive approach through its Complete Care model, which was developed in 2004 to address gaps in clinical care for 26 chronic illnesses. Based on a team approach, this model provides consistent evidence-based care by offering treatment for chronic conditions and screening at every patient encounter. By measuring national quality care indicators for chronic diseases beginning in 2005 through 2012, KP has demonstrated a 13.0% improvement in national quality care indicators for 25 illnesses. In addition, KP’s breast cancer screening rate among women aged 42-69 has improved by 2.7% from 85.6% in 2006 to 88.3% in 2009.

This proactive approach of integrating preventive services into all visits is especially relevant for patients in FQHCs because often the patients in these settings primarily focus on episodic visits for acute issues. In an analysis comparing preventive
care receipt among patients of FQHCs versus patients of other settings, breast cancer screening rates were higher (85%) at FQHCs than those at other practice settings (72%) when providers addressed multiple issues at all visits. Therefore, offering breast cancer screening referrals at all patient office visits (the point of care) offers an excellent opportunity for improving breast cancer screening rates.

While this approach makes sense from a clinicians’ viewpoint, there is also evidence supporting patients’ openness to point of care preventive referrals. In a recent study of hospitalized low-income women who were overdue for mammograms, 68% stated that they would be willing to have mammograms in the hospital setting. Furthermore, 91% of these women believed that it was important for health care workers to discuss breast cancer screening with them during their hospital stay. In a similar study of hospitalized women from low socioeconomic backgrounds who were due for mammograms, 72% stated that they would be willing to pay the additional cost of $83.41 for the convenience of inpatient mammogram screening. These studies support patients’ interest in obtaining mammograms within the context of episodic care including acute care hospital settings.

Since patients have identified provider referrals as a key factor in determining their rates of breast cancer screening, implementing a practice approach that supports the patient provider relationship is critical to improving mammogram rates. The Patient-Centered Medical Home (PCMH) is a model that focuses on patient-centered care, enhanced access, and comprehensive patient care within a personalized team structure. The key to the PCMH is to assign (also known as empaneling) a patient to a specific provider who, with the support of a care delivery team (CDT) of support
personnel, will provide comprehensive health care tailored to each patient’s needs and preferences. Implementation of the PCMH can improve both chronic and preventive care. In a recent study, researchers noted that patients receiving care in PCMHs increased their breast cancer screening rates by 5.4%, and this rate was the highest in practices located in lower socioeconomic geographical areas. In addition, the strong relationships that develop between patients and providers as a result of the PCMH are associated with a higher use of preventive services.

One of the first steps in the implementation of the PCMH is to empanel patients to a provider and a CDT. Once patients have a primary provider, there are specific strategies that can be implemented to track and improve primary health care providers’ referral rates for their panels of patients. Since providers frequently overestimate their screening rates, offering them direct feedback about their actual performance is one measure that effectively generates more mammogram referrals. In one study, researchers measured the impact of educating physicians in underserved areas about the American Cancer Society (ACS) guidelines for breast cancer screening, and determined that these doctors almost doubled their mammogram referral rates. Another intervention to improve providers’ awareness is the use of both electronic medical records (EMR) and the CDT to “flag” patients who are overdue for screening. Utilizing the CDT to implement practice tools such as chart prompts, tracking tools, and a reminder system minimize barriers to screening by streamlining the visit and creating more time for provider patient interactions.

Benefits from the expanded time frame for the patient provider relationship are maximized with patient-centered communication that is culturally appropriate and in a
language that patients understand. \textsuperscript{27} The Cultural Explanatory Model (CEM) is a framework based on the understanding that patients and health care providers may have different cultural explanations of health and illness.\textsuperscript{36} Health care providers who are guided by the CEM are more likely to encourage patient engagement in the screening process.\textsuperscript{36} The CEM approach to breast cancer screening concentrates on developing a mutual understanding of cultural definitions of breast health through its focus on language, literacy, and knowledge of cultural context.\textsuperscript{36}

Once a mutual understanding is achieved, this becomes the basis for integrating patients’ values and preferences into a process of informed decision making about mammogram screening. This approach, which has at its core the ethics of informed consent, encourages patients to actively engage in decision making about breast cancer screening.\textsuperscript{37} In one recent study of medical decisions, the researchers found that while 78-85\% of patients reported that providers made a recommendation, most patients were not asked about their preferences regarding these recommendations.\textsuperscript{38} Unfortunately, in this same study only 20\% of patients referred for breast cancer screening were asked for their opinions.\textsuperscript{38} Furthermore, patients with low-income or racial/ethnic minority backgrounds often experience even less of a partnership with their providers and have fewer discussions about cancer screening than nonminority affluent patients.\textsuperscript{39} Therefore, providers in FQHCs need to be diligent about improving patient-centered quality of care by utilizing the CEM and informed decision making models to avoid these disparities in breast cancer screening.
The Point of Care Integrated Breast Cancer Screening Model (PCISM)

In order to reduce the gap between evidence-based breast cancer screening recommendations and current practice, the Point of Care Integrated Breast Cancer Screening Model (PCISM) was developed to integrate these conceptual theories into a systematic approach (Figure 1). According to PCISM, providers should refer eligible patients for mammograms at the point of care, which means at any and all appointments regardless of the reason for the visit. Integrating this approach through the PCMH model improves breast cancer screening referrals by reinforcing the patient provider relationship through the CDT, by improving patient-provider communication through the CEM model, which also serves as a basis for shared decision making, and ultimately by providing comprehensive high quality care.
OBJECTIVES

The purpose of this practice improvement project was to increase mammogram referral and screening rates at a FQHC. The specific aims were to analyze the literature to determine the source of the gap between evidence-based recommendations and clinical practice, to develop and implement an evidence-based integrated breast cancer screening and referral model (the PCISM) to provide effective point of care referrals for breast
cancer screening, and to compare mammogram referral and screening rates between providers who adopted PCISM and those did not adopt PCISM.

METHODS

Setting and sample

The setting was an urban FQHC in New Jersey that provides primary care to an ethnically diverse patient population (87.3% minority) of 37,380 where 96.2% of the patients live below 200% of the poverty level and 27.7% are uninsured. 40

The sample included 8 internal medicine (IM) providers who were classified according to their selection of either the PCISM or the conventional model of mammogram referrals. The conventional providers (3 physicians and 1 nurse practitioner) made mammogram referrals only during preventive care visits while the PCISM providers (2 physicians and 2 nurse practitioners) provided mammogram referrals at all appointments regardless of the type of encounter. Both groups shared the common goal of referring all women of average risk for annual mammograms starting at age 40 and for as long as the benefits outweighed the risks.

Procedures

Since the FQHC clinical department had selected increased mammogram referral and screening rates as its clinical goal, the informational technology (IT) department provided individual statistics on these rates for all IM providers at monthly staff meetings over the 24 months of the program evaluation. These de-identified rates served as outcome measures for the program evaluation.

Because this project did not include specific patient or provider information, and practitioners were not identified in the screening and referral rate data, the project design
did not represent human subjects research, and an exemption by the Human Subjects Research Review Committee was granted.

**Data Analysis**

Providers identified solely by a number code were classified into two groups according to their selection of either the *PCISM* or the conventional model of mammogram referrals. Frequency data for providers’ screening and referral rates were collected from the introduction of the PCISM in January 2014 through December 2015. These data were analyzed with the chi²-test to determine whether there was a difference in the frequency (number) of mammogram screenings and referrals rates between the providers who used the PCISM versus those who used the conventional model. Baseline rates were recorded, and monthly referral and screening rates were reviewed and analyzed as outcome measures.

**RESULTS**

The differences in the mean number of patients referred for mammograms and the mean number of patients with completed mammograms between the PCISM group and the conventional group are displayed in Figures 2 and 3. The chi² analyses for referral and screening rates are presented in Tables 1 and 2.

Figures 2 and 3 display the screening and referral trends for the two groups by quarters. During three quarters, the referrals dropped noticeably particularly among the *PCISM* providers, and these periods of reduced referrals corresponded with specific stressors in the organization. During the fourth quarter of 2014, the mean number of referrals for *PCISM* providers dropped from 92-74, which coincided with the discontinuation of the FQHC’s on site free mammogram screening service due to lack of
funding. This trend reversed during the first quarter in 2015 when free mammograms were offered through a program at a local hospital. During the second quarter of 2015, referrals declined again when there was a shift of resources and staffing away from breast cancer screening to a new fully funded program to reduce unnecessary emergency and hospital visits. The agency also experienced staff resignations during this time, which presented challenges for the PCMH teams. The decline in the mean number of mammogram referrals (96-86) occurred during the fourth quarter of 2015, which coincided with leadership changes, and a new policy to increase each provider’s schedule by 30%. Despite these challenges, the \textit{PCISM} providers maintained a mean number of referrals throughout the 24 months that ranged from 70.8-96.8 per quarter as compared to the conventional group whose mean referrals ranged from 37.3-54.

Interestingly, the number of patients screened did not reflect the same variations that were noted in the referrals. Furthermore, both the \textit{PCISM} and conventional groups had more consistent patterns over time. The mean number of patients screened for the \textit{PCISM} group ranged from 39.4% to 53.8% with a steady trend upwards while the
conventional providers’ mean numbers ranged from 10.3% to 23% also with an overall upward trend. While referrals are primarily the responsibility of the providers, it is the patients who influenced screening patterns because they controlled whether or not the mammogram was completed. Patient participation in the screening process through shared decision making, and self-management could have contributed to higher screening success in the PCISM group. It is encouraging that the conventional providers’ screening patterns consistently increased over time, which could have been related to an indirect diffusion of the PCISM approach to screening.

The Chi square analysis demonstrates a statistically significant difference between the PCISM and the conventional clinicians’ referral and screening outcomes. During the 24-month project, a total of 9477 women were identified as being eligible for mammography. The PCISM providers cared for 5760 women while the conventional providers cared for the remaining 3717 women. In the PCISM group, 2444 women (42%) had received mammograms versus 581 (16%) in the conventional group. This
difference was statistically significant \((p<0.001)\) and therefore lends support to the effectiveness of the \textit{PCISM} approach to screening (see Table 2). There was also a statistically significant difference \((p<0.001)\) in referral rates between the intervention group (43\%) and the control group (37\%), which suggests a similar advantage of \textit{PCISM} for improving mammography referrals (see Table 1).

\textbf{Table 1.}
\textit{Comparison of Mammograms Ordered Between Intervention and Control Group \((n = 9477)\)}

<table>
<thead>
<tr>
<th>Variable</th>
<th>Response</th>
<th>Intervention ((n = 5760))</th>
<th>Control ((n = 3717))</th>
<th>Total</th>
<th>(P) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammogram ordered in past 24 months</td>
<td>Yes</td>
<td>2451 (43%)</td>
<td>1409 (37%)</td>
<td>3860</td>
<td>&lt; 0.001*</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>3309 (57%)</td>
<td>2308 (63%)</td>
<td>5617</td>
<td></td>
</tr>
</tbody>
</table>

\(p < 0.05\) (two-tailed), Chi-Square Test \((1, n = 9477) = 20.1\)

\textbf{Table 2.}
\textit{Comparison of Mammograms Performed Between Intervention and Control Group \((n = 9477)\)}

<table>
<thead>
<tr>
<th>Variable</th>
<th>Response</th>
<th>Intervention ((n = 5760))</th>
<th>Control ((n = 3717))</th>
<th>Total</th>
<th>(P) value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mammogram done in past 24 months</td>
<td>Yes</td>
<td>2444 (42%)</td>
<td>581 (16%)</td>
<td>3025</td>
<td>&lt; 0.001*</td>
</tr>
<tr>
<td></td>
<td>No</td>
<td>3316 (58%)</td>
<td>3136 (84%)</td>
<td>6452</td>
<td></td>
</tr>
</tbody>
</table>

\(* p < 0.05\) (two-tailed), Chi-Square Test \((1, n = 9477) = 746.7\)
DISCUSSION AND IMPLICATIONS FOR PRACTICE

The PCISM with its emphasis on point of care referrals, the PCMH, and the inclusion of patients’ cultural beliefs in patient centered decision making, offers a promising approach to improving breast cancer screening in FQHCs. As a result of the program evaluation, the IM department has implemented the PCISM approach with all providers. In addition the model will be expanded to include colon cancer screening. In order to improve the efficiency of PCISM, the clinical team has made the following revisions to the model: the CDT performs anticipatory visit planning to ensure that screening results are in the EMR to flag patients due for screening, and screening orders are placed in the patient’s chart prior to the visit. During the day of the appointment, the CDT provides a written summary detailing each patient’s needs, which is shared with the provider at morning team meetings so that strategies for implementing these orders can be reviewed. Providers are then able to focus on other priorities and merely need to sign the orders to validate them. The IT department is developing a system to interface screening results onto a flow sheet where the data can be captured and utilized for tracking. This approach provides screening feedback to providers and also identifies patients for outreach purposes.

In the future, it would be helpful to include patients more directly in the PCISM process by soliciting feedback on effective screening measures, and by engaging them with more community outreach. Future work includes developing and testing a culturally relevant shared decision making tool for discussion of screening issues with patients. This tool will focus on evaluating individual risk factors, patients’ values, and a review of the risks and benefits of mammography within the context of the individual patient. Other
strategies to meet patients’ preferences will include offering flexible screening schedules such as same day appointments, appointments close to the referral time, and patient selected reminder systems that would reinforce appointment times. Continued successful use of health fairs that focus on breast care as an important component of women’s health and that include families and friends also promote community outreach.

LIMITATIONS

Because the PCISM group and the conventional group of health care providers were self-selected rather than randomly assigned, and also because the two groups consisted of a different balance of provider types (i.e. physicians and nurse practitioners), it is possible that the differences in outcomes between the two groups may have been biased. The small sample size of providers in addition to the single study setting in one FQHC further limits the generalizability of the results to other practice settings with different types of staffing. Although the sample size of patient encounters was robust (9477), specific population characteristics such as demographics and disease burden were not collected which made it impossible to analyze similarities and differences between the groups. These factors could have had an independent influence on screening rates that were not related to the intervention and in future research demographic description of patient cohorts could be added. Finally, since the EMR system did not automatically capture screening rates, providers had to enter them manually. Therefore, even though providers in both groups stated that they consistently entered the data, the screening results could have been affected by omissions in data entry.
FUTURE INITIATIVES

The next step in the implementation of the *PCISM* model is to focus on the tracking and follow up of women with abnormal mammogram findings. This directive will help these patients complete the diagnostic process and will support early treatment of those women diagnosed with breast cancer.

CONCLUSION

Breast cancer is a leading cause of cancer morbidity and mortality in women that can be reduced with appropriate screening. While many factors influence screening rates in underserved populations, the number one factor that women cite for not obtaining a mammogram is the lack of a recommendation from their provider. Providers, especially those in busy FQHCs, often struggle with obstacles to screening such as a high volume of acute visits, agenda overload, and limited time. The findings of this small program evaluation suggest that the use of *PCISM* can improve mammography referral and screening rates in FQHCs, and in doing so, can translate evidence-based recommendations into preventive clinical practices that can ultimately save lives through early detection and treatment.

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