The Relationship Between Continuity of Care and Trust With Stage of Cancer at Diagnosis

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Background and Objectives: While continuity of care has been associated with an increased rate of cancer screening, it is unclear if continuity leads to earlier detection of cancer. This study examined the relationship between continuity of care and trust in one’s physician with stage of cancer among newly diagnosed colorectal and breast cancer patients. Methods: A total of 119 newly diagnosed cancer patients (97 breast, 22 colorectal) were surveyed in face-to-face interviews. The relationship between continuity of care and trust with the patient’s primary care physicians prior to diagnosis were examined in relationship to the patient’s stage at diagnosis via Spearman correlations and chi-square analyses. A stepwise logistic regression model was computed to examine the best predictors of stage at diagnosis. Results: Half of the patients reported that their cancer was found through screening. Continuity of care prior to diagnosis was related to receiving mammography. Continuity of care was not, however, significantly related to earlier detection. Trust in one’s primary care physician was related to earlier detection among both the entire sample of patients with colon and breast cancer and among a subsample of women with breast cancer. In a multivariate model, only detection through screening and trust predicted stage of diagnosis. Conclusions: Continuity of care is not related to earlier detection of cancer, while trust with a regular physician was associated with earlier detection of cancer.

(Fam Med 2004;36(1):35-9.)

Among the most common and deadly cancers are breast cancer in women and colorectal cancer in both men and women.1,2 Breast cancer accounts for one third of cancer diagnoses and 15% of cancer deaths in US women.3 In the year 2001 in the United States, breast cancer accounted for 192,000 new cases and 40,000 deaths. Breast cancer represents the leading cause of cancer death among women ages 20–59 and is the second leading cause of cancer death overall.4 Colorectal cancer is among the three most common cancers for women and men.5 Standard breast and colorectal cancer screening is recommended because early detection can reduce mortality.5,7 However, rates of screening for breast and colorectal cancer are suboptimal.8,9

Several characteristics of patients and the health care setting, particularly access to care, have demonstrated relationships with early detection of cancer. For example, patients lacking health insurance or having Medicaid insurance are more likely than other patients to be diagnosed with late-stage cancer.10 A late-stage diagnosis of both breast cancer and colorectal cancer has been also linked to being African American and to having low socioeconomic status.11,12 In addition, the supply of primary care physicians in a given area is associated with earlier detection of breast and colorectal cancer.13,14

Primary care providers play an important role in the delivery of preventive services. Continuity of care, a hallmark of primary care,15 is associated with important health outcomes such as a decreased likelihood of future patient hospitalization16,17 and less emergency department use.18 It has been suggested that discontinuity plays a role in increased medical errors and lessened patient safety.19 Further, continuity with an individual clinician has a positive effect over and above continuity with site of care.17

The likelihood of undergoing breast cancer screening tests among undifferentiated patient populations has been linked to both site and clinician continuity.20-22 Only one study, which linked continuity of care to colorectal cancer screening, found that higher continuity of care was associated with better adherence to recommended screening.23 Unfortunately, continuity of patient care is often lacking, and patients often have fragmented care across different providers.9,24-26
The trust that patients have in their physician to act in their best interest contributes to the effectiveness of medical care.\textsuperscript{27} For example, in a study of the influence of a publicized error in cervical cancer screening in the United Kingdom, the investigators showed that most women who reported that they were confident in the cancer screening program kept their appointments, while those who reported less confidence did not.\textsuperscript{27}

Despite the acknowledged importance of patients’ trust in their doctors, it has been investigated in little systematic research.\textsuperscript{28} This study’s purpose, therefore, was to determine the relationship between continuity of care and trust with a primary care provider with stage of cancer diagnosis among a sample of patients newly diagnosed with breast or colorectal cancer.

Methods

The present study used face-to-face interviews with newly diagnosed cancer patients. The study participants were 119 adult patients (> age 18 years) identified through the tumor board at the Hollings Cancer Center of the Medical University of South Carolina (MUSC) and through a community physician’s surgical oncology practice. During the study period, patients diagnosed within the previous 6 months with breast or colorectal cancer were approached by members of their patient care team regarding possible participation. Individuals who agreed to participate were interviewed in their home or in a medical office setting on the MUSC campus, depending on the preference of the patient.

The interview consisted of a variety of previously used closed-end items and scales. Interviews were conducted by trained research investigators. The interviewer was blinded to the patient’s stage of cancer at the time of the interview to reduce bias in data collection.

Instrument

The instrument in this study was created by the study team following a literature search of previously used questionnaire items that had relevance for the aims of the study. Several conditional items specific to the objectives of the study were developed and evaluated. The instrument was evaluated prior to implementation through the use of a pretest. The pretest involved a group of six non-patient volunteers, several of whom were breast cancer survivors, who completed the instrument and were subsequently debriefed by the investigators regarding the understandability and flow of the interview. The study was approved by the Institutional Review Boards of MUSC and Roper Hospital.

Variables

Continuity of Care. Continuity was operationalized in several ways. First, patients were asked whether they had a usual source of care prior to their diagnosis. This is a common way of operationalizing continuity in surveys.\textsuperscript{20} Specifically, we asked, “Was there one particular place that you usually went if you were sick or needed advice about your health?” and, if the patient had a regular place, “Was there a regular doctor you usually saw at this place?”

Second, if they had a regular doctor prior to the cancer diagnosis, we asked about the length of time of the relationship with the provider (ie, “How long had you been seeing this doctor?”).

Third, patients were asked to tally the number of visits during the past year prior to diagnosis that they had made with their regular doctor and with other doctors. The usual provider continuity (UPC) score was calculated by dividing the number of visits with their regular doctor by the total number of doctor visits. While the UPC score is very sensitive to the total number of visits, it is a common measure for addressing longitudinal care.\textsuperscript{15p.262} Patients who had not seen a doctor at all during the year were assigned to a separate “no visits” category and were not used in the calculation of mean or median UPC scores.

Stage of Cancer Diagnosis. For individuals with either colorectal cancer or breast cancer, we used the TNM (tumor, node, and metastasis) staging system. For colorectal cancer, the TNM staging was based on the American Joint Committee on Cancer guidelines.

Previous Use of Preventive Services. The patients were asked about participation in screening visits for cancer for the year prior to the cancer diagnosis.

Trust in Physician. Trust in the primary provider was measured by the Trust in Physician Scale.\textsuperscript{29} This scale consists of 11 five-point Likert-type items and has demonstrated reliability and validity. It has been used in other studies as an indicator of patient-physician trust.\textsuperscript{30} The dimensions of trust included in the scale have been replicated as important dimensions in a qualitative study focusing on patient-physician trust.\textsuperscript{31} This measure was used only for individuals who reported having a regular doctor.

Diagnosis Determined Through Asymptomatic (Screening) or Symptomatic Testing. Patients indicated if the cancer was detected by a screening test when they were asymptomatic or whether it was detected because of investigation of signs or symptoms. The patient indicated which signs or symptoms were identified by the patient and which were identified by the practitioner.

Demographics. Demographic variables were also collected. These included age, race, gender, education, and insurance status at time of diagnosis.
Data Analysis
To examine the relationship between continuity of care and stage of cancer at diagnosis, chi-square and Spearman’s correlations were computed. In addition to leaving the cancer stage as an ordinal variable for the Spearman’s correlations, we split cancer stage into two groups that corresponded to early- and late-stage diagnosis: group 1 (stages 0–I) and group 2 (stages II–IV).

To examine the importance of continuity of care and trust among women with breast cancer, we computed a stepwise logistic regression model of stage of cancer at diagnosis with the variables of length of time with regular doctor, UPC score, trust (median split at 45), age, race, education, income, and whether the cancer was found through screening or symptomatically. Since a UPC score could not be calculated for patients with no physician visits, they were excluded from the regression model and the Spearman’s correlations.

Results
A total of 119 respondents participated in this survey. The mean age of the total population was nearly 58 years old, ranging from 25 to 82 years, and 50% were 50–65 years old. The majority of the population was female (88.2%). The majority of the population was also non-Hispanic white (73.7%). African Americans comprised 21.2% of the total population. Most of the population (90.8%) had completed high school, and 37.8% had completed college. The breakdown of cancer types was 81.5% breast and 18.5% colorectal. The majority of the neoplasms were detected early; 84.7% were detected by stage II or earlier. The method for finding each cancer was split evenly between screening and symptomatic.

Source of Care
The vast majority of the population, more than 95%, reported that they had a particular place where they went when they needed care or advice about their health, before they were diagnosed with cancer. Of that group, more than 95% stated that they had a regular physician who they saw at that place. Further, 87% of those people still saw their regular physician while also seeing a cancer specialist. Family physicians comprised 51.1% of these regular physicians, while 36.2% were internal medicine specialists, and 10.6% were gynecologists. Almost half of the population (46.9%) had been seeing their regular physician for at least 6 years prior to their diagnosis with cancer, and 28% had been seeing their regular physician for more than 10 years.

Trust
The results of the Trust in Physician Scale indicated that most patients who had a regular doctor had a high degree of trust in that doctor. Scores on this scale ranged from 20 to 55, with a mean score of 43.5 (SD=7.3) and a median value of 45. Nearly two thirds of the respon-

dents (64%) said that their regular doctor did discuss the importance of early cancer detection with them prior to their diagnosis.

Continuity
The UPC scores ranged from 0 to 1 with a mean (±SD) of .64 (±.34) and a median of .71. Twelve patients (10.1%) had no visits during the year.

Relationships Between Continuity and Cancer Diagnosis
Table 1 demonstrates a positive relationship between continuity of care and mammographic evaluation among women with breast cancer. After a median split of UPC and inclusion of the “no visits” group as a separate category, there was a significant relationship with mammogram evaluation. Women who had no physician visits were more likely to have never had a mammogram. Having received a mammogram was not related to how long patients had been with a regular doctor. Undergoing a mammogram was, however, related to having the breast cancer detected at an earlier stage. Among women who reported having a mammogram, 43% were detected at stage II–IV, while among those who had never had a mammogram, 100% were detected at stage II–IV (P=.001).

Using Spearman’s correlations to examine the relationships between cancer stage at diagnosis (0–4) with UPC score (r=.14, P=.16), Trust in Physician score (r= -.19, P=.06), and length of time with physician (r=.01, P=.93), no significant relationships (at P<.05) were observed in the entire population. No significant correlations were yielded in the subpopulation of women.

Table 1
Mammography and Continuity Among Females With Newly Diagnosed Breast Cancer+

Mammography and Continuity
Have you ever had a mammogram?

<table>
<thead>
<tr>
<th></th>
<th>Usual Provider Continuity</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>No visits</td>
</tr>
<tr>
<td>Yes</td>
<td>88</td>
<td>6.8</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>44.4</td>
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</tbody>
</table>

Mammography and Length of Time With MD
Have you ever had a mammogram?

<table>
<thead>
<tr>
<th></th>
<th>Number of Years</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Yes</td>
<td>88</td>
<td>14.8</td>
</tr>
<tr>
<td>No</td>
<td>9</td>
<td>11.1</td>
</tr>
</tbody>
</table>

* n=97
with breast cancer. We found no significant relationships between the two cancer stage groups and the number of years with a regular physician or UPC for either the entire sample or the breast cancer sample (Table 2). There was a significant association between cancer stage at diagnosis and physician trust for both the entire population (P=.02) and women with breast cancer (P=.006) (Table 3).

A stepwise regression model yielded only two variables significantly related to the collapsed stage of cancer at diagnosis among women with breast cancer. The variables were how it was found, indicating that detection symptomatically detected cancer later, (OR=.28, 95% CI=.11–.69) and trust in their primary care provider; higher trust (OR=2.51, 95% CI=1.02–6.20) was associated with earlier detection. The continuity variables were not significant predictors in the model.

Discussion

This study was designed to examine the relationship between continuity of care and patient trust in primary care physicians with stage of cancer diagnosis in a cohort of recently diagnosed breast cancer and colon cancer patients. These results reaffirmed the relationship between continuity of care and likelihood of being screened. However, in the group of patients studied, there was no significant association between continuity of care and stage of cancer at diagnosis. On the other hand, greater trust in one’s regular physician was associated with earlier detection of cancer.

The questions that these findings raise suggest that continuity of care may not have as strong a relationship with certain health outcomes as initially hypothesized. For example, only a weak correlation was found between UPC and stage of diagnosis (r=.14). Interestingly, this correlation is similar to what was found in a recent study (r=.15), which concluded that continuity is important in quality of care for patients with type 2 diabetes. Moreover, a recent study examining a national sample of patients covered by a large health insurer found no significant relationship between continuity and quality of care for patients with diabetes.

These findings are particularly important because they point to the potential problem of interpreting a statistically significant relationship as a strong relationship. Further, the findings of statistically significant relationships between continuity and mammography and mammography and earlier detection but a weak correlation between continuity and early detection points to the importance of examining the relationship of a potential predictor with the outcome of interest rather than an intermediate outcome.

Perhaps access to care rather than continuity of care is the critical component in detecting cancer earlier, as was shown in the studies examining the availability of primary care physicians per capita. However, it may be access and exposure to one’s regular physician that is important. Among patients with early cancer detection (stage 0, I), 60% had more than two visits to their regular doctor in the year prior to the diagnosis. This can be compared to only 43% of later-stage diagnosed patients having had more than two visits (P=.054). When it comes to visits to any doctor, among patients with early cancer detection (stage 0, I), 59% had more than four visits to any doctor in the year prior to the diagnosis. Among patients with later-stage cancer, 50% had more than four visits (P=.31).

The finding of trust and earlier detection may indicate an important aspect of the patient-physician relationship. The findings indicate that the relationship between trust and the health outcome of stage of cancer at diagnosis becomes clearer when cancer is dichotomized as early or late stage. Trust has been seen as an important issue in cancer screening programs. It is important to note that with the present design there is a possibility that this measure may suffer from some post-hoc bias by

### Table 2

<table>
<thead>
<tr>
<th>Number of Years With Regular MD: Cancer Stage Group</th>
<th>P Value</th>
<th>Number of Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>n</td>
</tr>
<tr>
<td>All patients</td>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Group 1 (stage 0–I)</td>
<td></td>
<td>59</td>
</tr>
<tr>
<td>Group 2 (stage II–IV)</td>
<td></td>
<td>60</td>
</tr>
<tr>
<td>Females with breast cancer</td>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Group 1 (stage 0–I)</td>
<td></td>
<td>50</td>
</tr>
<tr>
<td>Group 2 (stage II–IV)</td>
<td></td>
<td>47</td>
</tr>
<tr>
<td>Usual Provider Continuity: Cancer Stage Group</td>
<td></td>
<td>n</td>
</tr>
<tr>
<td>All patients</td>
<td></td>
<td>n</td>
</tr>
<tr>
<td>Group 1 (stage 0–I)</td>
<td></td>
<td>59</td>
</tr>
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<td>Group 2 (stage II–IV)</td>
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<td>47</td>
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</tbody>
</table>
asking about trust in one’s primary care physician after the cancer diagnosis.

**Limitations**

In addition to the aforementioned concern about post-hoc bias, some additional limitations of this study should also be noted. First, the data were based on self-reports and could be affected by memory and recall bias. However, enrolling patients in the study at the time of diagnosis limited potential recall bias in the interview. Further, by enrolling patients as they are first diagnosed, we had the ability to include individuals with later-stage cancer because they were still alive. Second, the study has a relatively small sample size. However, the correlations are so weak that, although increasing the sample size may provide more power, the strength of the relationships is unlikely to change. Another limitation concerns the recruitment methods used to identify patients. Patients were recruited from the ranks of specialty physicians who were seeing patients on a referral basis.

**Conclusions**

This study provides information on the role of continuity of care and trust in one’s physician and early detection of cancer. Access to care and trust in a physician, rather than continuity, may be the key to increasing early detection of cancer in primary care practice.

**Acknowledgments:** We thank Paul Baron, MD, Janet Bloch, and Peggy Levene for their help in enrolling patients. This study was supported in part by a grant from the Office of Naval Reserve.

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**References**