Prevalence and Implications of Multiple Cancer Screening Needs Among Hispanic Community Health Center Patients

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Abstract

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Objectives: To examine adherence rates for multiple cancer screening tests, which will inform prevention efforts in community health centers (CHCs).

Methods: We report on the prevalence of screening for multiple cancers (cervical, breast, colorectal) among 43,000 patients who are predominantly Hispanic, in four CHC sites that share an integrated electronic medical record.

Results: Among the 20,057 patients eligible for at least one test, 43% of the population was current on all screening targets; 15,887 additional screening tests were needed among 11,526 individuals.

Conclusions: Expanding use of health information technology in community health centers provides an opportunity to create an electronic infrastructure for addressing multiple screening needs from a patient-centered perspective.

Keywords

Introduction

There has been significant interest in maximizing cancer screening rates as a means to reduce cancer health disparities. Use of mammography, Pap smear and colorectal cancer (CRC) screening remain sub-optimal for all adults, but screening rates are even lower among those who have low income, have limited education, are from racial/ethnic minority groups, and who do not have health insurance. [1–4] Hispanics, in particular, have lower screening rates than whites; between 25% and 50% of Hispanics are current for colon cancer screening, [5, 6] about 50% of Latinas have had a pap smear in the previous year [7–9], and between 40% and 60% are current with ACS breast cancer screening guidelines. [10, 11]

There is now evidence supporting the positive impact of quality improvement (QI) efforts [12, 13] on cancer screening rates. [14–16] The effectiveness of such efforts appears to be enhanced by use of technology, such as electronic medical records for tracking and follow-up. Efforts to enhance cancer screening fit well within the current emphasis on both the patient-centered medical home, and the Health Information Technology for Economic and Clinical Health Act (HITECH), under which millions of dollars have been allocated for improving health care outcomes through health information technology. [17, 18]

Because settings providing care to low-income populations, such as community health centers (CHCs), typically have very limited resources, it is particularly important that efforts to improve quality of care are both effective and efficient. As new resources for implementing EMRs are available for CHC settings, it is important to identify challenges currently faced, so that new systems can address solutions to on-going problems. A particular challenge in these settings is that QI efforts related to cancer screening have almost exclusively focused on single screening targets (e.g. mammography only; CRC only). This may be a function of funding sources, or the fact that cancer screening recommendations are issued by disease site. The location of screening within the health care system also differs by site. For example, cervical cancer screening is typically addressed at

individual medical visits, while breast cancer screening may not be available on-site. Some forms of colorectal cancer screening are available through most care settings (e.g. FOBT), but other forms are not (e.g. colonoscopy).

Cancer screening is complex, particularly for women, with different tests recommended for different populations and age groups. As a result, there are multiple potential combinations of screenings that an individual patient may need, depending on age and gender. For example, a woman over age 50 could be behind on seven different combinations of screening tests (e.g. pap only; mammography only; CRC only; pap and mammography; pap and CRC; mammography and CRC; or pap and mammography and CRC). Thus, the current focus on single screening needs does not match clinical reality of individual patient needs. There could be considerable efficiency provided by using an integrated approach, in which all needed screenings were addressed rather than focusing on each screening test as a separate target. Such an integrated approach would provide each patient with comprehensive outreach, tailored to his or her particular combination of needed screenings.

Very few studies report on adherence rates across multiple cancer screening targets [19, 20], particularly among the whole population of a health care system. Such information would be very important for planning QI efforts, and for determining if more integrated strategies would be useful. The purpose of this paper is to utilize existing EMR data to report on prevalence of screening across multiple targets (cervical, breast, and colon) among patients in a large community health care center serving a predominantly low income and Hispanic population.

Methods

Utilizing electronic medical record data from a large urban CHC in Massachusetts, we performed a cross-sectional descriptive analysis of comprehensive cancer screening practices of individuals who are active patients in primary care. The Harvard School of Public Health Institutional Review Board approved this study.

Setting:

The Greater Lawrence Family Health Center (GLFHC) is a federally qualified CHC located in Lawrence, MA, a city that is predominately Latino (> 60%) and has high levels of poverty and limited resources. [21] Approximately 80% of Latinos living in Lawrence receive care at one of the 4 clinics operated by GLFHC. [22] All four clinic sites share an integrated EMR. There are approximately 43,000 active patients at GLFHC who have had at least one visit in the preceding 2 years; this group comprises the population for the present study.

Design:

The "screening eligible" denominator population included active patients, defined as individuals who have had at least one visit with a primary care provider within the previous two years, and fell into the appropriate age and gender categories (see Table 1). A three-month data collection buffer was used to allow enough time for screening results to be recorded in the EMR. For women, age was part of the eligibility determination; only women in the 50–70 year age group were eligible for all three screening tests. The 21–39 age

group was eligible only for pap tests. An algorithm was computed to determine the various potential combinations of needed screenings, yielding subpopulations in need of either one (pap or mammography or CRC), two (any combination of two; women only), or three screenings (pap and mammography and CRC; women only).

Measurements:

Patient data are derived from the GLFHC clinical data repository built from data in the EMR. Data come from two sources in the EMR: Medical Record Category (MRC) codes are assigned to documents that get manually scanned into the EMR and lab results entered directly into the EMR by the laboratory. Screening counts, which are used to define "current', are derived from the corresponding MRC code or laboratory value. PAP smear completion was determined by documentation through either directly downloaded laboratory results or scanned PAP reports. Mammography completion was determined by scanned mammography reports. CRC completion was determined by either fecal occult blood test (FOBT) laboratory result or scanned colonoscopy reports.

Results

Table 2 presents demographic data on the GLFHC population, which is predominantly Latino and largely lives below the federal poverty level. Approximately 60% have limited English proficiency (LEP), with higher prevalence among older patients. Approximately 98% of those patients with LEP require Spanish translation. The majority of GLFHC patient care staff, including clinicians, are bilingual in Spanish and English. Medical assistants are predominantly hired from the local community to ensure the linguistic and cultural fit with the patient population. Among the 43,000 active patients at GLFHC at the time of the analysis, 20,057 (16,560 females and 3,497 males) were considered to be eligible for at least one of the three target screening tests.

Table 3 presents data on individual screening targets for the eligible population. In order to bring all eligible patients into compliance, 15,887 separate tests would need to be performed. Fifty-eight percent (58%) of the women eligible for a pap were current, as were 58.5% of those eligible for mammography, and 32.5% of women eligible for CRC screening. Twenty-eight (28%) percent of men who were eligible for CRC screening were current.

Table 4 presents data on the number of patients with various levels of screening. These data, unlike that presented in Table 3, represent non-overlapping categories, examining those eligible for one, two, or all three screenings. Among eligible patients, 11,526 were in need of at least one screening test, representing 57.5% of the eligible population. Substantial gender differences were evident; 46% of women were current on all eligible screenings, compared with 28% of men.

Among the 54% of women who were not current for all of their recommended screenings, 34% were behind on 1 screening, and 20% were behind on two or more. The proportion behind on screening for only one test was consistent for all four age groups. However, there was a precipitous drop in being current on all eligible screenings as age increased. This

is expected, as older groups have more screening targets. However, only 24% of the older women (71+ years of age) were current with both recommended screenings, despite their greater risk of developing cancer, compared with 48% of women age 50–70. An examination of screening rates by Latino ethnicity suggested little variation across ethnicities (data not shown).

Discussion

Few studies have taken an integrated approach to promote cancer screening, in which the totality of screening needs of an individual patient are considered. The data presented here examine multiple cancer screening needs in a large CHC serving a Hispanic population. The findings demonstrated that, among the population of 20,057 patients that were eligible for at least one screening test, there were *15,887 screening tests needed.* However, cancer screening was needed in only *11,526 individuals.* While this is still a large number of people, by looking across multiple screening tests, it may be possible for CHCs, which typically have very limited resources, to begin to focus their screening efforts more systematically. These data further suggest that a key target for cancer screening is women over age 50, a group in which almost 50% are behind on two or more screenings. CRC screening is an issue for both men and women.

Barriers to screening adherence do differ to some extent by screening target. For example, complexity and convenience of screening may be a bigger issue for CRC screening than for cervical cancer screening[23, 24]. Cost maybe more of an issue for mammography and colonoscopy than for cervical cancer screening and FOBT[23, 24]. A key barrier for cervical cancer screening is that younger women may be less likely to have a regular health care provider or to see their provider regularly. However, there are many commonalities that could be addressed effectively across screening tests, rather than for one test at a time, such as knowledge about the screening tests, anxiety, and the presence of competing health and other priorities. In addition, by conceptualizing screening completion across tests rather than separately, CHCs will be better positioned to develop systems and QI approaches that can have the broadest impact. From a resource perspective addressing multiple tests simultaneously may be both cost-effective and less burdensome for the patient. If screening efforts are separated by disease site, with different teams working on different screening needs, the lack of coordination likely yields significantly greater costs, more patient contact, and may reduce timely adherence with recommendations. Our findings suggest it may be fruitful to explore more integrated, patient-centered approaches, in which all screening needs would be addressed simultaneously, rather than discretely approaching patients about each needed test. Patient navigation in the US has largely been structured by test, and hence there are breast cancer patient navigators, cervical cancer navigators, and increasingly colon cancer navigators. It may increase efficiency and patient comfort to integrate the approach to all screening needs, in which patients would be provided with comprehensive outreach, tailored to his or her particular combination of needed screenings.

Screening rates were remarkably similar across the different Latino ethnicities. This is somewhat different from findings in other disease areas, such as diabetes, where there are significant differences among Latino ethnic groups. [25] It is difficult to determine if

the findings in the present study reflect population group or setting differences. Gorin & Heck [26] found differences in screening rates by Latino ethnicity, with Dominican women being more likely to have had a mammogram compared to other groups, and Cuban/Cuban-Americans and the "Other Hispanic" group having higher CRC screening rates. Language preference has also been found to be associated with CRC screening status; Latinos who completed the BRFSS survey in Spanish were less likely to be current with CRC screening than English-language completers. Both groups of Latinos were less likely to be current with CRC screening than English-speaking non-Latinos. [27] The similarity in screening across ethnicities found in the present study may be due to the commonality of lifestyle and ubiquity of the single community health care system in the city of Lawrence, in which this study was conducted, rather than to country of origin. These findings are also interesting in light of a recent analysis of NHIS and SEER-Medicare data that found Hispanics age 50 and older were more likely to live in counties with less capacity for providing endoscopies, compared with African-Americans and whites. [28] A modest impact of area capacity on CRC screening uptake was found, and racial/ethnic disparities in screening rates were reduced, although still present, when area characteristics were accounted for in the analysis.

In the present study, more men than women were in need of CRC screening (73.74% vs. 66.19%). These results are in contrast to studies that have found higher rates of compliance for CRC for men than women, [29–33] although analysis of the 2006 BRFSS data found comparable screening rates for men and women (0.9% difference). Jandorf, et al. [34] found that 53.3% of a Hispanic sample (n=400) recruited from community based organizations and health clinics in New York City reported having had a colonoscopy (self-report), and rates were slightly higher for females than males (54.3% vs. 50.4%). It is possible that machismo is a barrier to CRC screening for Hispanic men [35] and may contribute to the low CRC screening rates for men in this study.

Age played a very interesting role in screening among women in this study. Younger women were only eligible for one screening test (pap), and 65% were current for that screening. However, only 24–42% of older women who needed two screenings were up-to-date for all eligible screenings, and only 17% of women needing three screenings were current for all eligible screenings. These data suggest that, if the goal is to reduce cancer risk/increase early detection through maximizing screening rates, strategies are needed to reach women who have multiple screening needs.

There is considerable excitement in the medical community about the current emphasis on health information technology (HIT), and use of the EMR as one component of the patient-centered medical home. [18] However, the primary limitation of this study is the potentially limited accuracy of the screening data as extracted from the CHC's EMR. This provides an important warning regarding the implementation of HIT and the impact it may have on efforts to increase efficiency and provision of quality care. For example, colon cancer screening results do not always appear in the EMR. This is due to the nature of FOBT testing, in which there are multiple steps and outside laboratory testing, and the fact that all colonoscopies occur outside of the GLFHC system. A manual chart review of patients reported to be in need of CRC screening in the EMR at one of the four GLFHC sites found evidence of completed CRC screening for 20% of the patients. Likewise, a

medical record review study of a comparable network of CHCs revealed that 53% of those appearing unscreened in the EMR had, in fact, been screened. [36] Undercounting of a complicated process such as CRC screening needs to be recognized and addressed as well as possible until health reporting products and capabilities improve. As EMRs are increasingly being implemented in safety net health care settings, it is critical that processes be implemented to ensure accurate reporting of cancer screening, especially for CRC, which has been a significant focus of QI efforts in many settings. On the other hand, this study may *underestimate* the community need, since the dataset misses, by its nature, those individuals who have no interaction with the healthcare system at all. Taking all pieces into consideration, these date provide an reliable approximation of screening prevalence to permit interventions to improve quality.

Despite the noted concerns, EMRs do provide an efficient means of establishing potential screening needs at both the individual and population level. This is key as organizations assess the impact of systems-wide interventions to increase screening. For health centers that use them, EMRs are a fundamental part of efforts to increase efficiency in care, and to create a patient-centered medical home. [18] However, such technology has not been widely available in health care settings serving very low income populations until recently. [37] It is possible that this lack of technical capability is at least, in part, responsible for the low levels of cancer screening found in these settings. However, the current federal investment in information technology infrastructure at CHCs is building a foundation of change for the future. A key point from the present study is that an EMR is only one part of a system-level approach to improving preventive care, and in and of itself does not improve outcomes. Both patient and provider-level factors are critical in efforts to increase screening compliance. Expansion of health information technology in CHCs provides an important opportunity to create an electronic infrastructure for documentation of cancer screening needs and results from an integrated perspective, and to address multiple screening targets. Taplin and colleagues [38] describe the functionality of an EMR that might meet the needs of a planned approach to screening implementation.

Conclusions

An integrated approach to cancer screening is highly consistent with a patient-centered orientation to medical care. Cancer screening is complex, with different tests needed based on gender and age. An integrated approach may increase compliance among patients and efficiency of the health care center. Patients may appreciate their CHC addressing similar issues at the same time and health centers could save significant time for the health care delivery system, by providing comprehensive outreach, tailored to an individual's particular combination of needed screenings.

Acknowledgments

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Table 1

Definition of "Current" for Recommended Cancer Screening Tests [a]

Screening Test	Gender	Age		Timing of Last Screening
Pap	Female	age 21 and	age 70	within the previous 27 months (2 yrs + 3 month data collection buffer)
Mammography	Female	> age 40		previous 15 months (1 yr + 3 month data collection buffer)
CRC	Female and Male	age 50		(1) colonoscopy within 10 years; or (2) FOBT within 15 months (1 yr + 3 month data collection buffer).

[a] Based on US Preventive Service Task Force and American Cancer Society Clinical Guidelines.

Table 2

Demographic Characteristics of GLFHC Patient Population

Characteristic	%
Gender (% female) over 18	63
Race/Ethnicity over 18	
Latino	
- Dominican	35
- Puerto Rican	15
- Other Hispanic	24
Black/African-American	<1
White	6
Asian	1
Other (includes individuals for whom information is not available on race/ethnicity)	18
Below federal poverty level	91%
Health insurance coverage	
Medicaid, safety net, other state funded	62%
Commonwealth Care (subsidized state program)	9%
Commercial/Private	13%
Medicare	9%
Uninsured	7%

Table 3

Baseline Screening Prevalence by Individual Screening Target (n=20,057)

Screening Test	# of Screening Eligible	# Screened/Current	% Screened	# Not Current on Screening/	% Needing Screening
PAP	15,680	9,115	58.13%	**6565**	**41.87%**
Mammography	8169	4783	58.55%	**3386**	**41.45%**
CRC (Women)	5052	1645	32.56%	**3407**	**67.44%**
CRC (Men)	3,497	968	27.68%	**2529**	**72.32%**
Total Tests Needed				**15,887**	

Table 4

Multiple Cancer Screening Prevalence By Age Group and Gender

	Age Group	# of screening eligible	Current on all eligible screenings		Behind 1 Screening		Behind 2 Screenings		Behind 3 Screenings	
			N	%	N	%	N	%	N	%
Women	**21–39**	8032	5144	**64%**	2888	**36%**	n/a	**n/a**	n/a	**n/a**
	40–49	3476	1535	**44%**	1120	**32%**	821	**24%**	n/a	**n/a**
	50–70	4172	672	**16%**	1315	**32%**	1189	**28%**	996	**24%**
	71+	880	212	**24%**	309	**35%**	359	**41%**	n/a	**n/a**
	Total women only	16560	7563	**46%**	5632	**34%**	2369	**14%**	996	**6%**
Men	**50+**	3497	968	**28%**	2529	**72%**	n/a	n/a	n/a	n/a
Total women & men		20057	8531	**43%**	8161	**41%**	2369	**12%**	996	**5%**