BREAST CANCER DISPARITIES (LA NEWMAN, SECTION EDITOR)

Leveraging Electronic Health Records to Address Breast Cancer Disparities

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Abstract

Purpose of Review Breast cancer is the most commonly diagnosed cancer in women, and the leading cause of cancer death. However, racial and ethnic minority groups, as well as rural and underserved populations, face disparities that limit their access to specialty care for breast cancer. To address these disparities, health care providers can leverage an electronic health record (EHR).

Recent Findings Few studies have evaluated the potential benefits of using EHRs to address breast cancer disparities, and none of them outlines a standard approach for this effort. However, these studies outline that EHRs can be used to identify and notify patients at risk for breast cancer. These systems can also automate referrals and scheduling for screening and genetic testing, as well as recruit eligible patients for clinical trials. EHRs can also provide educational materials to reduce risks associated with modifiable risk factors, such as physical activity, obesity, and smoking. These systems can also support telemedicine visits and centralize inter-institutional communication to improve treatment adherence and the quality of care.

Summary EHRs have tremendous potential to increase accessibility and communication for patients with breast cancer by augmenting patient engagement, improving communication between patients and providers, and strengthening communication among providers. These efforts can reduce breast cancer disparities by increasing breast cancer screening, improving treatment adherence, expanding access to specialty care, and promoting risk-reducing habits among racial and ethnic minority groups and other underserved populations.

Keywords Disparities · Patient portal · Electronic health record · Breast cancer

Introduction

Breast cancer is the most commonly diagnosed cancer in women, and the leading cause of cancer death. In 2020, more than 2 million women were diagnosed with breast cancer worldwide, accounting for 1 in 4 cancer cases and 1 in 6 cancer deaths. Although the incidence of breast cancer is lower in Black women than White women, the rates of deaths due to breast cancer are higher in Black women than White women [1]. In fact, Black women are 40% more likely than White women to die of breast cancer due to genetic predisposition, aggressive tumor biology, differential access to health care, and social determinants of health [2]. Compared with White women, racial and ethnic minority groups, as well as rural and underserved populations, have less access to specialty care for breast cancer and a disproportionate risk of breast cancer–specific mortality associated with poverty, obesity, and lower treatment adherence [2–4].

To address disparities in breast cancer, health care providers can leverage an electronic health record (EHR). Over the past decade, these systems have increased transparency and access to medical information. In 2011, the federal Meaningful Use program [5] encouraged health care organizations to allow patients to view and download their personal health records. Since then, several federal incentives and loan programs have emerged to promote EHR use, including the Medicare and Medicaid Promoting Interoperability

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Programs, the Medicare Access and CHIP Reauthorization Act, and initiatives to support telehealth during the COVID-19 pandemic. EHR systems continue to expand and offer more functions and capabilities for personalization, which can support access to health care services, including those for breast cancer.

Unfortunately, not all patients have equal access to EHRs. Although more than 90% of providers offer patient portals, only one-third of patients enroll in them [6•]. And the likelihood of enrollment is lower for patients among racial and ethnic minority groups, who are over 65 years old, and who have low income, low health literacy, or chronic illness [7, 8, 9•, 10•, 11]. A factor that might contribute to low enrollment is opt-in policies. These policies require patients to consent for portal activation, creating additional requirements and barriers for patients [12].

Patients who do enroll in patient portals primarily use them for the electronic communication forum within EHRs [13]. Many enrolled patients (75%) use EHRs to communicate with their providers, and some (25%) use them for medication refills [11]. Even fewer patients use EHRs for patient-reported symptoms and treatment-related outcomes [8]. Notably, Black (25%) and Asian (7%) patients are less likely than White (56%) patients to view portal messages and open portal links or attachments [14], so they are more likely to miss important health care information.

The cause of differences in EHR use is multifactorial. For example, nearly 1 in 4 households lack broadband internet or internet-compatible devices that support enrolling in EHR portals [15]. Also, patients with low education or low income, including among racial and ethnic minority groups, may have low digital literacy that limits their ability and willingness to enroll [16–18]. Another factor is language barriers. EHRs are primarily in English, which disenfranchises patients whose native language is not English. Mistrust and privacy are also important factors. Patients with low socioeconomic status and of racial and ethnic minority groups may feel mistrust due to historic mistreatment of vulnerable populations and privacy, which may contribute to disparities in enrollment [9•, 19].

Despite entrenched barriers, enrollment and access among underserved populations can be improved with community interventions and changes in health policies [20, 21]. For instance, portal enrollment could be restructured to allow universal access and "opt-out" policies, which would eliminate requirements for active enrollment. Also, usability could be improved by increasing accessibility to online portals in languages other than English and by offering technical training and assistance programs [8]. For example, nurse navigators can teach patients how to use telehealth and patient portals [8, 18, 22]. But to be successful, these interventions must coordinate with outreach programs that aim to increase internet and device accessibility.

EHRs have tremendous potential to increase accessibility and communication for patients, including those with breast cancer. However, the literature contains limited studies on the potential benefits of EHRs in addressing breast cancer disparities. Herein, we summarize these studies and describe how EHRs can be leveraged to mitigate disparities in breast cancer (Table 1).

Table 1 EHR applications to address breast cancer disparities

Outcome	Disparity	EHR recommendation
Increase patient engagement in health care	• Black women have earlier onset of breast cancer • Black women are diagnosed at a later stage	• Automate mammography scheduling • Automate screening reminders
	• Black women have a genetic predisposition to aggressive tumor biology	• Determine eligibility for genetic testing • Refer to telegenetics counseling
	• Black women are more likely to be obese, which is a risk factor for breast cancer	• Identify patients who would benefit from weight management • Distribute educational materials to support healthy behaviors
Improve communication between patients and providers	• Underserved and racial and ethnic minority groups have less access to specialty care	• Support telemedicine visits
	• Black women have lower adherence to endocrine therapy	• Support treatment and symptom management
	• Racial and ethnic minority groups are underrepresented in clinical trials	• Determine eligibility for trials • Notify patients and providers about available trials • Collect patient-reported outcomes
Strengthen communication among providers	• Underserved and racial and ethnic minority groups have less access to specialty care	• Support multidisciplinary conferences • Foster quality improvement initiatives

Countermeasures: What Does the EHR Support?

Institutions typically use one of two main types of EHRs. Some use a central EHR, in which patients can access aspects of their medical information through a patient portal. Others use two separate EHRs—one for providers and one for patients—that collectively share information. Both EHR types can support breast cancer care by (1) increasing patient engagement in health care, (2) improving communication between patients and providers, and (3) strengthening communication among providers. These three strategies can cumulate and hold enormous potential to impact disparities in breast cancer.

Increasing Patient Engagement in Health Care

Screening

Although Black women have a lower lifetime incidence of breast cancer, they have disproportionately high mortality rates due to early onset of disease, a later stage diagnosis at presentation, and aggressive tumor biology [23, 24]. One way to address these high mortality rates is to use EHRs. These systems are uniquely positioned to increase communication with patients diagnosed with breast cancer, provide them with electronic health information, and improve their access to health care. For example, the EHR could notify and automate appointment scheduling for screening mammography [25], which can detect breast cancer early [26]. Such scheduling strategies could be designed to increase screening among underserved populations, including racial and ethnic minority groups, helping to mitigate racial disparities in breast cancer.

Genetic Testing

Black women have a genetic predisposition to developing aggressive subtypes of breast cancer associated with earlier onset and higher mortality. This predisposition can be mitigated with advances in precision medicine, which are paving the way for personalized breast cancer prediction, risk stratification, and targeted therapy [23, 24]. However, to take advantage of these advances, we need systems to identify and refer patients who would benefit from genetic testing.

To identify such patients, specific treatment algorithms in EHRs can group patients with similar tumor phenotypes. For example, ICD-9 codes have been used to predict aggressive breast cancers and genetic risk [27, 28]. Based on genetic testing guidelines from the National Comprehensive Cancer Network, other factors could also determine eligibility for genetic testing. These factors include diagnosis of breast cancer before age 50 years, diagnosis of triple-negative breast cancer before age 60 years, personal history of breast cancer, and family history of certain malignancies, among other factors. In fact, patient and family history are identifiable through EHRs, which could flag and alert providers of testing eligibility.

Once eligible patients are identified, EHRs could be used to address other barriers to genetic testing. For example, racial and ethnic minority groups are underrepresented in genetic testing [29–31], which informs screening algorithms, prophylactic contralateral mastectomies, and targeted therapies (e.g., poly-ADP ribose inhibitors). Indeed, Black patients (76%) are less likely than White patients (92%) to be referred for genetic testing related to breast cancer. However, once Black women are referred, their uptake rates are similar to White women [30]. To increase genetic testing and mitigate risk (32), EHRs can be used to identify and refer eligible patients for genetic testing. They could also facilitate patient education on the importance of genetic testing. Furthermore, EHRs could be combined with telegenetic services to increase access to genetic counselors [18, 32].

Risk Reduction

EHRs could be used to assess modifiable risk factors that contribute to disparities in breast cancer in underserved communities, including racial and ethnic minority groups. These groups endure a disproportionate burden of modifiable risk factors, including poverty, obesity, nutrition, smoking, and many other socioeconomic factors, that can contribute to breast cancer risk [33, 34]. For example, higher body mass index is associated with a greater risk of occurrence and recurrence of breast cancer [35]. EHRs could identify patients with higher body mass index and notify patients and providers of the high risk [21, 22, 29]. These systems could also provide patients with information about nutrition, weight-loss programs, smoking cessation, and other healthy behaviors that lower the risk of breast cancer [36].

Improving Communication Between Patients and Providers

Access

Underserved populations, including those in rural communities and racial and ethnic minority groups, experience disparities in access to specialty care for breast cancer. During the COVID-19 pandemic, such access improved as a result of the increase in telemedicine and remote oncologic

care. Such telemedicine visits ease access to specialty care by reducing barriers related to geographic location, transportation, childcare responsibilities, and employment leave [20–23, 33]. In this way, EHRs can support telemedicine visits and improve treatment adherence by increasing patient engagement in treatment monitoring, follow-up appointments, and shared decision-making [33].

Adherence

EHRs can facilitate communication between patients and providers by supporting platforms that increase connectivity and social support. For example, patient portals can teach patients about their cancer diagnoses and share information about treatment options [37]. These portals can also support patient communication with providers about managing their symptoms [38]. This strategy reduced anxiety and improved treatment adherence among patients undergoing active treatment with endocrine therapy or oral chemotherapy [2, 3]. This adherence is important because hormone therapy reduces deaths due to breast cancer; yet, almost 50% of patients do not complete standard 5-year courses of treatment [39, 40]. Such reduced adherence is a greater risk for Black women, as Black women with hormone receptor-positive breast cancer are almost twice as likely as White women to die of breast cancer [41]. This disparity is partly attributed to reduced adherence to endocrine therapy among Black women [42, 43].

With EHRs, patients can also communicate with breast cancer survivors. Such communication has been linked to lower depression, reduced pain, and improved adherence to treatment plans [19, 25]. These communication strategies show the tremendous value of EHRs in improving treatment experiences and outcomes among underserved populations.

Clinical Trials

In the USA, racial and ethnic minority groups bear the greatest cancer burden [2]. These groups are underrepresented in clinical trials, which are important studies for advancing oncologic treatment and improving outcomes. This underrepresentation is associated with low accrual rates that are partly due to patients' lower awareness of ongoing trials and providers' bias in recruiting participants [44]. To overcome these challenges, EHRs can identify eligible patients based on certain characteristics and recruit them for research with limited bias [14, 45]. Such eligibility could also be determined using platforms that integrate oncologic data, such as Inspirata [46]. Then, patient recruitment could be encouraged through portal messages and notifications to patients and providers about trial eligibility [45, 46].

EHRs can also be used to routinely collect patient-reported outcomes for clinical trials. This approach is associated with improved outcomes, as it supports restructuring and developing practices for patient-centered care [8]. EHRs could also capture patient-reported outcomes to understand symptom management, the impact of adverse events, and treatment experiences. This information could be integrated with perspectives of underserved populations to inform more culturally competent and inclusive health care systems.

Strengthening Communication Among Providers

EHRs can facilitate communication among health care providers to promote quality improvement initiatives and inter-institutional communication for breast cancer care. For example, standardized templates in EHRs can support multidisciplinary conferences that increase connectivity between providers and access to specialty care. Such templates have already improved care by standardizing disease management and more effectively addressing breast cancer disparities [47]. EHRs can also centralize provider communication that is fragmented across multiple institutions, which often leads to worse outcomes for patients [48]. In California, multiple institutions share oncologic information with Oncoshare [49], which exemplifies the feasibility and benefits of centralizing communication among oncology providers.

Conclusion

EHRs are valuable tools that could be leveraged to mitigate breast cancer disparities. These systems can reduce risk, expand access to care, and enhance the quality of treatment for breast cancer by increasing patient engagement in health care, improving communication between patients and providers, and strengthening communication among providers. Each of these three strategies include multiple factors that can be targeted to drive initiatives that increase access and improve the usability of health information for breast cancer care.

Declarations

Competing Interests The authors declare no competing interests.

Human and Animal Rights and Informed Consent This article does not contain any studies with human or animal subjects performed by any of the authors.

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