

# The National Prevention Strategy and Breast Cancer Screening: Scientific Evidence for Public Health Action

Mammography screening rates in the United States have remained fairly stable over the past decade, and screening rates remain low for some groups.

We examined insights from recent public health research on breast cancer screening to identify promising new approaches to improve screening rates and address persistent health disparities in mammography use. We considered this research in the context of the four strategic directions of the National Prevention Strategy: elimination of health disparities, empowered people, healthy and safe community environments, and clinical and community preventive services.

This research points to the value of direct outreach and case management services, interventions to support more patient-centered models of care, and more organized, population-based approaches to identify women who are eligible to be screened, encourage participation, and monitor results. (*Am J Public Health*. 2013; 103:1545–1548. doi:10.2105/AJPH.2013.301305)

Marcus Plescia, MD, MPH, and Mary C. White, ScD

**OVERALL, ABOUT ONE IN FOUR** women in the United States aged 50 to 74 years have not had a mammogram within the past two years, as is recommended.<sup>1</sup> Mammography use is substantially lower for certain subgroups, such as low-income women, women without health insurance, and women without a usual source of care.<sup>1–3</sup> In addition, breast cancer screening rates have not improved in almost a decade<sup>4,5</sup> and the Healthy People 2010 target that 70% of women aged 40 to 74 years received a mammogram in the past two years was not achieved.<sup>6</sup> The Healthy People 2020 cancer objective uses new age guidelines and calls for a 10% improvement in the proportion of women aged 50 to 74 years who received a mammogram in the previous two years, as well as a reduction in late-stage female breast cancer (an intermediate outcome of cancer screening success).<sup>7</sup>

Current efforts and approaches are clearly not sufficient to meet these national goals. New approaches are needed to further increase mammography utilization to achieve Healthy People 2020 objectives. Whether a woman receives a mammogram is influenced by a range of personal, social, and economic factors, and these factors are interrelated. The use of scientific evidence from extensive research on the determinants of mammography utilization could increase effective public health practice. The National Prevention Strategy<sup>8</sup> outlined four strategic directions to integrate

recommendations across multiple settings: elimination of health disparities, empowered people, healthy and safe community environments, and clinical and community preventive services.

The purpose of this analysis was to examine insights gained from recent research on breast cancer screening in the context of these four strategic directions for prevention. Integrating efforts in a coordinated public health effort may result in improved mammography utilization, reduction in breast cancer mortality, and improvement in longstanding health disparities.

## ELIMINATION OF HEALTH DISPARITIES

A recent review of 195 research studies that included a total of 4.8 million US women found that lack of insurance was a strong, statistically significant predictor of women not obtaining recommended mammography screening.<sup>9</sup> In 1992, Congress authorized the Centers for Disease Control and Prevention to implement the National Breast and Cervical Cancer Early Detection Program to provide screening services to medically underserved, low-income women for breast and cervical cancer. However, this program serves only a small percentage of eligible women in the United States.<sup>10</sup> When fully enacted, components of the Affordable Care Act will help address major barriers to cancer screening through Medicaid expansion,

subsidized state insurance exchanges, and elimination of cost sharing.

Nevertheless, many women with financial access to health care are not being screened.<sup>1</sup> Among insured women, those with fee-for-service care are only half as likely to receive mammograms as those in health maintenance organizations, and those with public insurance are less likely than women with private insurance to receive them.<sup>9</sup> Analyses of national Medicare data<sup>11</sup> reveal that, despite coverage for mammography services for women aged 65 years or older, only 64% of eligible women have had a mammogram within the previous two years. Women who use Medicare whose family incomes are less than 100% of the federal poverty rate have only a 51% screening rate.<sup>11</sup> A North Carolina study of women aged 50 years and older with Medicaid coverage found that only 51% had received appropriate breast cancer screening within the previous two years.<sup>12</sup> Nonfinancial factors that may influence a women's ability to access screening services include language, geography, cultural differences, provider biases, lack of social support, and lack of knowledge.<sup>9</sup> Mammography use has been shown to vary by race and ethnicity, and to be lower for specific subgroups of Hispanic and Asian women and for foreign-born women with less than 10 years of US residence.<sup>1</sup>

Mammography alone has no benefit if appropriate follow-up does not occur after an abnormal finding. Racial/ethnic minorities

and those from lower socioeconomic backgrounds are less likely to have timely follow-up after an abnormal screening test and are more likely to be diagnosed with late-stage disease, which is associated with greater mortality.<sup>13,14</sup> Case management services have been shown to improve the time to diagnosis among low-income women.<sup>15,16</sup> A recent analysis of the effect of the Centers for Disease Control and Prevention's early detection program on breast cancer mortality estimated that medically underserved women screened through the program, which provides follow-up and referral services, experienced more life-years saved than similar women who were screened without the program, and even greater life-years saved than women who had not been screened.<sup>17</sup>

## EMPOWERED PEOPLE

Many factors influence a woman's intent to access screening services. A 2003 report by the Institute of Medicine reviewed research that documented a wide range of barriers to use of mammography screening based on a woman's knowledge and attitudes about the risk of breast cancer and the benefits of screening.<sup>18</sup> A recent focus group study conducted with women from multiple racial and ethnic backgrounds including White non-Hispanic, Black non-Hispanic, Hispanic, Japanese American, and American Indian/Alaskan Native found that time needed to schedule appointments, competing time demands, and concern about radiation exposure were some of the factors that reduced their likelihood of obtaining a repeat mammogram, therefore causing these women to be nonadherent with current recommendations.<sup>19</sup> Many believed

that they were not at high risk for breast cancer because of a negative family history, regardless of age.<sup>19</sup> Barriers identified in an extensive literature review also included pain associated with the procedure or a lack of knowledge regarding breast cancer detection and treatment.<sup>9</sup>

Several studies have found that women who had received screening in the past were more likely to be screened again.<sup>9</sup> Research on factors associated with rescreening found that women were less likely to be rescreened if they felt embarrassed or if scheduling an appointment was not convenient.<sup>20</sup> On the other hand, having no primary care provider and not having visited a physician within the past year reduced mammography utilization.<sup>9</sup> Among working women aged 40 years and older, those with paid sick leave were more likely to have had a mammogram within the previous two years than were those without it.<sup>21</sup> Women with disabilities were found to be less likely to obtain a mammogram at recommended screening intervals.<sup>22</sup>

## HEALTHY AND SAFE COMMUNITY ENVIRONMENTS

Community characteristics provide the environmental context in which screening decisions are made. Public health interventions that change the environmental context in which individuals live can be highly effective because they have broad reach and require less individual effort.<sup>23</sup> Several measures are associated with mammography use in the United States, such as the number of health centers or clinics in a county.<sup>24</sup> Also, a lower number of office-based physicians per 100 000 women has been

associated with later-stage breast cancer diagnosis.<sup>25</sup> In addition, screening rates vary considerably by geography and are lowest in west-central states and the states with the lowest population densities as well as the fewest mammography facilities.<sup>3,5</sup>

This association between mammography availability and mammography use has also been documented in smaller geographic analyses; counties with no mammography units have the lowest mammography utilization.<sup>26</sup> Marked geographic differences have been documented in mammography capacity. Counties with no mammography facilities were the poorest, had the lowest level of health insurance coverage, and had the lowest density of primary care physicians.<sup>27</sup> Even in areas with adequate mammography capacity, spatial accessibility can still be a barrier for women who depend on public transportation. In Atlanta, for example, the median time to a mammography facility when one used public transportation was almost 51 minutes, compared with six minutes with a vehicle. Women who lived in communities that were primarily Black had longer travel times, regardless of vehicle availability.<sup>28</sup>

## QUALITY CLINICAL AND COMMUNITY PREVENTIVE SERVICES

Another frequently mentioned reason for not participating in breast cancer screening is that a provider did not recommend the test.<sup>29</sup> For example, a national survey of unscreened women found that about 70% reported that they had not received a provider recommendation for mammography.<sup>30</sup> Evidence-based interventions have been shown to increase cancer screening

rates.<sup>31-33</sup> These include reminders to clients and providers to ensure that people are screened according to recommendations, and assessment of providers including feedback on their performance in screening for cancer. However, widespread implementation of these approaches is difficult in our fragmented health care system. In a study of primary care physicians' practices, just 40% reported that they had a system to remind women to come in for breast cancer screening.<sup>34</sup>

Although most clinicians are familiar with the recommendations of the US Preventive Services Task Force, the American Cancer Society, and specialty professional associations, wide gaps have been documented between guidelines and clinical practice.<sup>35</sup> These include the persistent use of in-office rectal examination with stool guaiac testing to screen for colorectal cancer<sup>36</sup> and failure to adopt longer screening intervals in women with a normal Papanicolaou test or human papillomavirus-negative cervical cancer screening test results.<sup>37</sup> With regard to mammography, recent research points to discordant recommendations for screening for those who are unlikely to benefit from screening including screening for women who are terminally ill<sup>38</sup> as well as mammography use among women younger than 40 years.<sup>39</sup>

To maximize the quality of screening, abnormal results must be followed up. However, inadequate identification, diagnosis, and follow-up of positive screening tests also occur persistently, even among patients with insurance.<sup>40</sup> A study of practice cancer registries from 16 community health centers found that although all centers reported breast cancer

screening data, reporting of follow-up after diagnosis was not consistent.<sup>41</sup> Only 50% reported whether women had received notification of mammography results within 30 days, 12.5% reported on follow-up of an abnormal mammogram within 60 days, and 6.25% reported on whether treatment was initiated within 90 days.<sup>41</sup> A study of women aged 50 years and older across seven health plans found that, among women who had late-stage breast cancer at the time of diagnosis, 52% had not been screened according to guidelines and 8% had not received timely follow-up of their abnormal mammograms.<sup>13</sup>

## IMPLICATIONS

This research suggests that new approaches are needed to improve breast cancer screening rates in the era of health care reform. As more women gain access to care by being insured, a more organized approach will be needed to maximize participation in breast cancer screening. This approach should include identifying women who are eligible to be screened and providing outreach and follow-up, with targeted intensive efforts to reach underscreened groups such as those of lower socioeconomic status, those who are not insured, and racial/ethnic minorities and their health care providers.<sup>42</sup> Collection and use of surveillance data on screening behaviors, provider practices, and breast cancer incidence could identify and target disparate populations, assess changes over time in breast cancer incidence and outcomes,<sup>43</sup> and ensure adequate follow-up of positive cancer screening tests. Provider practices can be monitored to ensure the delivery of evidence-based

clinical preventive services and to guide quality improvement efforts.

Approaches that address the environmental context of mammography utilization and geographic disparities in the availability of services can be developed to better guide population-based outreach.

Interventions to develop more empowered consumers of medical services and support more patient-centered models of care are prioritized in current efforts to improve the quality of medical care.<sup>44</sup> Informed decision-making can be supported through individual interventions that address health literacy and population-based interventions that increase knowledge about the risks and benefits of cancer screening. Use of emerging social media modalities and the development of campaigns to improve health literacy can help encourage women to seek appropriate screening services. Research suggests that radio and other communication strategies can be effective ways to reach economically disadvantaged Black women.<sup>45,46</sup>

Community-based participatory research, a collaborative approach to research that fully engages members of the community in all aspects of the research process, can help build the evidence base for implementing effective mammography programs in minority and medically underserved populations.<sup>47</sup> Direct outreach and case management have been identified as promising practices to effectively reach communities most affected by health disparities, particularly when those who provide outreach are well known and trusted in the community (e.g., peer educators, *promotores de salud*, or patient navigators). Effective use of peer educators (i.e., community members

promoting healthy behaviors) has been documented to improve cancer screening efforts and help mitigate racial and ethnic disparities.<sup>48–50</sup> Patient navigation (i.e., assistance in understanding medical terms and procedures, and in coping with challenges to receiving services such as a language or cultural barriers, transportation, child care, or finances) is an increasingly popular form of outreach and case management that is designed to facilitate patient participation in complex testing and follow-up procedures associated with cancer screening.<sup>51</sup>

With the magnitude of cancer morbidity and mortality and the considerable capacity that has been developed through the 20-year history of the National Breast and Cervical Cancer Early Detection Program, public health leaders must develop a comprehensive, strategic, and national approach to cancer control. Implementation of the Affordable Care Act will provide opportunities to increase participation in breast cancer screening, and the National Prevention Strategy framework can ensure that screening is more widespread and equitable. These approaches to improving breast cancer screening rates could ultimately save many lives and provide a model for future collaboration across other clinical preventive services. ■

**Note.** The findings and conclusions in this article are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

## Contributors

Both authors participated in the conceptualization and writing of this article and approved the final version.

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