

STANDING AGAINST CANCER: A MODEL OF MEDICAL CARE DELIVERY FOR LOW-INCOME POPULATIONS¹

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ABSTRACT

Socio-economic disparities in health outcomes are extensively documented. One of the urgent tasks for medical sociology is now to facilitate the elimination of these disparities. Medical sociologists and public health researchers can pursue this goal by studying successful efforts to increase access to medical care and improve health outcomes among the socio-economically disadvantaged, then analyzing in a sociologically informed manner what made them successful. To that end, this paper examines Stand Against Cancer, a program of Access Community Health Network, which delivered 46,238 breast and cervical cancer screenings to over 28,016 low-income uninsured women over a two-year period, finding 153 cancers and precancers. This program reached a demographic that is unlikely to screen by a) limiting eligibility to the underserved, b) providing all screenings for free, c) providing full linkage to free diagnostic and treatment services, and d) providing nurse case management for all abnormal cases. These four components constitute a model for reaching underserved populations. This model has been successful and it can be replicated through programs that detect a wide variety of medical conditions.

INTRODUCTION

Low-income uninsured women are substantially disadvantaged in their access to the basic women's health services of breast and cervical cancer screening. Many public health efforts have ameliorated the resulting disparities on relatively small scales—on the order of several hundred or a few thousand women at a time. But few interventions have achieved the larger-scale impact of providing these services to tens of thousands of low-income uninsured women in a given locale.

Stand Against Cancer, a program of Access Community Health Network in Chicago, has successfully reached low-income uninsured women with breast and cervical cancer detection services on an unusually large scale. This article evaluates Stand Against Cancer and presents a model of delivering medical services to disadvantaged populations based on this program. After

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briefly contextualizing breast and cervical cancer in the United States, I describe in detail the program's structure, results, costs, and data collection methodology. I argue that Stand Against Cancer is particularly successful because it is structured to accommodate the patient's social context; it is sociological in its model of service delivery. On the basis of this insight, I outline a sociologically informed public health model for reaching the low-income and uninsured populations with medical care. Stand Against Cancer is instructive to sociologists, health care researchers, and health practitioners both in itself and in the replicable model it suggests.

THE PROBLEM

More than 250,000 women in the United States will be diagnosed with a new case of breast cancer in 2010, and an additional 11,000 will have a new case of cervical cancer.² More than 40,000 will die from breast cancer, and nearly 4,000 from cervical cancer. Breast cancer is the second-most common cancer among women (skin cancer is the first), as well as the second-most fatal (lung cancer is the first). Cervical cancer incidence and mortality are lower, partly because it is detectable while precancerous and tends to progress slowly. For these reasons, both regular breast and cervical screening are crucial preventive elements of women's health care.³

These cancers are usually treatable if detected at an early stage. Treatment of early stage breast and cervical cancers results in lower rates of mortality than treatment of late stage cancers (Lawson et al. 2009, Ries et al. 2008). Regular screening with clinical breast examinations, screening mammograms, Papicolaou (Pap) tests, and pelvic examinations are the most effective means of detecting these diseases early. However, there are disparities in screening rates along class and race lines; minority women and low-income women are less likely to screen regularly for breast and cervical cancer than middle or high-income and white women (Peak and Han 2004, Virnig et al. 2009, Reyes-Ortiz et al. 2008, Campbell et al. 2009, Harper et al. 2009). Corresponding mortality disparities have been observed for both breast and cervical cancer; minority women and low-income women are more likely to die from these diseases (Brookfield et al. 2009, Albano et al. 2007, Blackman and Masi 2006, Hirschman et al. 2007).

Identifying all of the systematic causes of these disparities is beyond the scope of this paper. I show one way to reduce these disparities by analyzing how a particular intervention

² Figures from this paragraph are from the American Cancer Society (2009).

³ This remains true despite the 2009 modifications to the U.S. Preventive Service Task Force's screening guidelines, which altered the recommended ages and frequency for providing screening mammograms, but not clinical breast examinations or cervical screenings (U.S. Preventive Services Task Force 2009). Breast and cervical cancer screening remain widely accepted as central components of women's health care.

successfully detected breast and cervical cancer among a disadvantaged population. To partially contextualize the social situation in which this program operates, Table 1 quotes from a series of health-themed town hall meetings held in some of the underserved communities that Stand Against Cancer serves (see the methodology section below for more information on these meetings). These representative quotations are *not* from Stand Against Cancer patients. They are from some of the residents who the program has not reached, and they are meant to give a sense of some of the real and perceived barriers to care that Stand Against Cancer tries to overcome.

Table 1: Selected Testimonials from Underserved Chicago Women

- *There is no way to find a place to get a mammogram. Doctors won't even accept Medicaid any more. Where do we get mammograms? I ask my friends. No one knows.*
- *For as long as I've been going to the doctor, maybe one doctor has told me to get a mammogram so I think a lot of times the doctor's office don't tell you.*
- *Let's say we did get [mobile] mammography vans. I think it's unethical to get vans, get all these people to be screened for breast cancer and we find it, which is great, but we can't do nothing about it. Then what do we have people do?*
- *I can't go to you doctor or any other hospital because I don't have health insurance and County [Cook County Hospital] sends you a bill now ... the reason why a lot of women don't go, we don't have income and don't have no insurance.*

(Metro Chicago Breast Cancer Task Force 2007:26, 31, 68-9, 69, 41)

THE PROGRAM

Stand Against Cancer is a breast and cervical cancer detection program funded by the Illinois Department of Public Health. The program was founded in 2003 to cover the entire state of Illinois. It is administered through separate grants to the Chicago metropolitan and downstate areas. This article uses data from the Chicago area segment of Stand Against Cancer, which is led by Access Community Health Network (ACHN), the nation's largest federally qualified health center. The program consists of screening, nurse case management, and diagnostic components, with linkage to treatment services.

The screening component is by far the program's largest, in terms of both women impacted and financial cost. ACHN, together with eight other subcontracted federally qualified health centers, offer clinical breast and cervical cancer screening at no charge to any uninsured woman who lives below 200 percent of the federal poverty level. The subcontracted partners are smaller; combined, they operate 31 primary care locations that provide 38 percent of Stand

Against Cancer's screening services; ACHN operates 46 primary care locations and provides 62 percent of screening services.⁴

The screening protocol is the same as the National Breast and Cervical Cancer Early Detection Program. For breast screening, this means a clinical breast examination first, followed by a screening mammogram if the result is normal. An abnormality at either stage is followed directly by diagnostics. There are many breast diagnostic procedures; the most common are diagnostic mammograms, ultrasounds, and biopsies. For cervical screening, this means a Pap test and simultaneous pelvic examination, followed by diagnostics in case of an abnormality. There are many cervical diagnostic procedures as well; the most common is colposcopy.

All patients with an abnormal result receive free nurse case management services to coordinate their free diagnostic and, if necessary, treatment services. Nurse case management is essentially clinical patient navigation, i.e. personalized step-by-step guidance through a medical process, often by phone, and sometimes in person. It is based on a model that has been shown to increase cancer treatment adherence (Eli et al. 2007, Ferrante et al. 2008).

The Illinois Breast and Cervical Cancer Program—Illinois' component of the Center for Disease Control's National Breast and Cervical Cancer Early Detection Program—provides free diagnostic tests for women screened through Stand Against Cancer. ACHN is also a lead agency for this program, which means it is a clinical hub and fiscal agent through which women are referred to hospitals.⁵ Those hospitals bill ACHN for the necessary screening and diagnostic services. If a woman is diagnosed with cancer, ACHN's nurse case managers assist her application for Medicaid coverage through the Cancer Treatment Act. If that application is approved, the woman becomes insured, and hospitals can directly bill the state Medicaid office for her treatment. If that application is not approved, the nurse case managers will refer the woman to public hospitals for treatment. Breast screening and diagnostics follow the guidelines of the Commission on Cancer of the American College of Surgical Oncology (see Cady et al. 2008). Cervical screening and diagnostics follow the guidelines of the American Society for Colposcopy and Cervical Pathology (see Wright et al. 2002, Wright et al. 2007). Through its partnership with the Illinois Breast and Cervical Cancer Program, Stand Against Cancer provides

⁴ From 2006-2008, the screening providers were ACHN, Chicago Family Health Center, Circle Family Healthcare Network, Erie Family Health Center, Heartland Health Outreach, Howard Brown Health Center, Mile Square Health Center, Near North Health Services Corporation, and PCC Community Wellness Centers.

⁵ From 2006-2008, participating hospitals were Mt. Sinai Hospital, Resurrection St. Francis Hospital of Evanston, and St. Francis Hospital of Blue Island (renamed Metro South Medical Center in 2009).

a comprehensive continuum of breast and cervical cancer detection services from free screening, to free diagnostics and nurse case management, to linkage with treatment services.

This is by no means the first breast and cervical cancer program to target low-income uninsured women. Other interventions have used public education campaigns (Bigby et al. 2008), lay health educators (Fernandez et al. 2009), patient navigators for breast cancer cases (Battaglia et al. 2007), patient navigators for cervical cancer cases (Cardin et al. 2001), or a combination of lay health educators and patient navigators (Gabram et al. 2008, Ferrante et al. 2007). There have also been demonstration projects that, unlike Stand Against Cancer, provided services on a temporary basis (Ansell et al. 1994).

Unlike these examples, the aforementioned National Breast and Cervical Cancer Early Detection Program is both a permanent and comprehensive detection program. However, this program is difficult to analyze because it is spread across many diverse grantees that use its funding for different needs. For instance, some states use their funding for diagnostic services and leverage other resources for screening while others use it for both screening and diagnostics. Of those states that directly fund screening, some do so only for screenings that had abnormal results while others do so for all screenings. Some states use the grant to pay for outreach efforts as well as clinical services, while others do not include an outreach component. Because grantees are only obligated to report those services paid for with grant funding, the data are not comparable across states or even counties, making a full program evaluation impossible without detailed data on how funding was spent and combined with other programs in every instance.

Based on the published literature, Stand Against Cancer appears to be one of very few—perhaps the only—indefinite, comprehensive, uniformly implemented programs that delivers breast and cervical cancer detection services to low-income women across a large geographic area. Stand Against Cancer not only adds to the literature on breast and cervical cancer programs, it also suggests a generalizable model of reaching the low-income uninsured with basic health services.

METHODOLOGY

Data for the program's clinical screening performance measures come from reimbursement forms generated by ACHN from its own medical records or submitted to ACHN by the subcontracted screening partners. ACHN's medical records are compiled via a front desk work flow that requires new patients to individually complete a one-page registration form

consisting of basic health information, including standard demographic data. Returning patients complete a new registration form once per year. Their responses are data-entered into Meditech software, which includes an aggregatable database component. All gender and race data is self-reported. Per federal regulations pertaining to federally qualified health centers, income assessments are performed on all uninsured patients in order to place them on a sliding fee scale. Stand Against Cancer patients are not charged a sliding scale contribution—all of the program's services are free—but the same income assessment confirms their eligibility for the program.

Women screened through Stand Against Cancer are required to sign a consent form that authorizes the screening provider to share information in her medical file with the funding agency and with referral recipients as necessary. All participating agencies obtain signed consents using the same form, and include the following minimum data elements for each screening examination in their data submissions: unique ID or first and last name of the woman screened, date of birth, race and ethnicity, type of screening examination provided, date of screening examination, and any abnormal findings.

Nurse case management data is gathered from the case tracking spreadsheets that nurse case managers compile. The case management staff works out of a single office located inside an ACHN health center to which all Stand Against Cancer referrals and relevant medical information are faxed. Tracking includes a written referral log, paper files, and spreadsheets that compile clinical data.

Town hall meeting quotations are from four open fora organized in 2007 by the Metro Chicago Breast Cancer Task Force—a group of health providers, administrators, and researchers, including myself. The meetings solicited community input for a report on reducing Chicago area breast cancer mortality disparities. They were held in low-income, minority-dominated communities: two on the west side, one on the south side, and one in the south suburbs. The neighborhoods were canvassed in advance and were each attended by several dozen residents, nearly all women. A brief presentation showing a racial disparity in breast cancer mortality in Chicago was followed by an open-microphone format on the general theme of how to solve this problem. For more detail, see Metro Chicago Breast Cancer Task Force (2007:66-75).

RESULTS

To present Stand Against Cancer in its mature stage, I will focus on data from fiscal years 2007 and 2008 (July 1, 2006—June 30, 2008). These were the first consecutive years in which

the Chicago segment of the program did not experience double-digit growth. Table 2 presents the program's quantitative impact over this two-year period, during which 28,016 individual women received 46,238 screenings. Ethnic minorities made up 95 percent of Stand Against Cancer patients. When a woman received both a breast and cervical cancer screening on the same day, these are counted as two screenings since they are separate procedures that may yield different results. When a woman received both a clinical breast examination and a screening mammogram on the same day, they are counted as two screenings for the same reason.

Table 2: Two-Year Numerical Impact, FY 07 & FY 08

Screening	
Pap test & pelvic examination	24,050
Clinical breast examination	16,252
Screening mammogram	5,936
Total screenings	46,238
Nurse Case Management	
Breast abnormalities case managed	2,172
Cervical abnormalities case managed	846
Total case managed	3,018
Cancer Detection	
Breast cancers detected	83
Cervical cancers and precancers detected	70
Total cancers and precancers detected	153

Stand Against Cancer measures its clinical quality in terms of rates of abnormal screening and cancer detection. Tables 3 and 4 show annual data on these outcomes for breast and cervical cancer from FY 07 and FY 08. The breast call-back rate equals the number of

Table 3: Breast cancer screening call-back and cancer detection rates, FY 07 & FY 08

Location	Total Screenings	Abnormal Results	Breast Call Back Rate	Breast Cancers Detected	Breast Cancers Detected per 1,000 Women Screened
ACHN	14,875	1,775	12%	74	5.0
Other FQHC*	7,313	397	5%	9	1.2
Total	22,188	2,172	10%	83	3.7

*Federally qualified health center

Table 4: Cervical cancer screening call-back and cancer detection rates, FY 07 & FY 08

Location	Pap Tests and Pelvic Examinations	Abnormal Results	Cervical Call Back Rate	Cervical Cancers and Precancers Detected	Cervical Cancers Detected per 1,000 Women Screened
ACHN	14,007	753	5%	62	4.4
Other FQHC*	10,043	93	1%	8	0.8
Total	24,050	846	4%	70	2.9

*Federally qualified health center

abnormal screening results divided by the number of screenings. A clinical breast examination is abnormal when it reveals a palpable mass; a mammogram is abnormal when its reading is either inconclusive or potentially cancerous. A high breast call-back rate is not necessarily representative of high cancer incidence; the culprit could be a low quality of clinical breast examination or a high number of inconclusive mammograms.

Stand Against Cancer measures the quality of its nurse case management in terms of the lost to follow-up rate and the timeliness of receiving a final diagnosis. The lost to follow-up rate represents the women with abnormal screening results who do not receive a final diagnosis, either because they do not show up for their diagnostic services, because they cannot be reached to receive their results, or because they choose to continue their care at an unaffiliated hospital and do not inform ACHN of their diagnosis. A low lost to follow-up rate indicates effective patient navigation through a complex medical process. Table 5 shows that Stand Against Cancer has a low lost to follow-up rate.

Table 5: Lost to follow-up rate, FY 07 & FY 08

FY 07 & 08	Total Case Managed	Total Lost to Follow-up	Lost to Follow-up Rate
Breast	2,159	58	2.7%
Cervical	859	49	5.7%
Total	3,018	107	3.5%

Minimizing the time between initial screening and diagnosis is important not only for the sake of good customer service, but also because eligibility for the Illinois Breast and Cervical Cancer Program is contingent on receiving a diagnosis within 60 days of screening. Table 6 shows that the proportion of Stand Against Cancer patients who received their diagnosis within 60 days is 85 percent.

Table 6: Diagnoses within 60 days of initial examination, FY 07 & FY 08

FY 07 & FY 08	Total Abnormals	Total diagnosed \leq 60 days	% diagnosed \leq 60 days
Breast	2,159	1,986	92%
Cervical	859	587	68%
Total	3,018	2,573	85%

Stand Against Cancer achieved its results at an affordable cost. Table 7 shows that the total cost of the program's screening, diagnostic, and nurse case management services for the same two-year period, including indirect costs, comes to about \$5 million. The table compares this cost to the number of cancers and precancers detected. (I comment on the strengths and limitations of the cost per detection metric below in the discussion.)

In sum, Stand Against Cancer reaches tens of thousands of uninsured, low-income

Table 7: Cost Per Cancer Detected, FY 07 & FY 08

(A) Stand Against Cancer funding	\$3,144,561
(B) IBCCP* funding applied to Stand Against Cancer patients	\$963,960
(C) In-kind contribution from ACHN	\$883,257
(D) Total Cost (A+B+C)	\$4,991,778
(E) Cancers and Precancers Detected	153
(F) Cost Per Detection (D) / (E)	\$32,626

*Illinois Breast and Cervical Cancer Program

women through integrated screening, diagnostic, and nurse case management efforts. The program successfully detects both breast and cervical cancers. Its nurse case management unit has a low lost to follow-up rate. The process is timely from screening to final diagnosis in 85 percent of cases. The program managed to detect its cancers and precancers for an average of about \$32,600 per detection.

DISCUSSION

The low-income and uninsured are relatively unengaged with the American health care system. Stand Against Cancer managed to reach over 28,000 adult women in this category and delivered more than 46,000 breast and cervical cancer screenings to them in two years. Those screenings detected more than 150 cancers and precancers. This program provides evidence that the systematic barriers preventing large segments of the United States population from receiving basic health care services can be mitigated with focused public health interventions. Ultimately, those barriers must be eliminated on the same systematic level at which they are now institutionalized, and this will require a re-structured health care system.⁶ Until this happens, however, focused interventions of this type can still improve health outcomes. While not a substitute for systematic reform, the expansion and replication of interventions like Stand Against Cancer deserve consideration as a stopgap public health orientation that can supplement without replacing public hospitals, free clinics, and federally qualified health centers.

A Model of Delivering Medical Services

The success of Stand Against Cancer suggests a strategy for reaching low-income uninsured patients. A model that is feasible for medical conditions other than breast and cervical cancer—indeed for any treatable condition that can be detected through screening—can be

⁶ The health care legislation under discussion in early 2010 does little to restructure the health care system. While its ability to pass Congress is in doubt as of this writing, even the relatively ambitious proposals under discussion are primarily concerned with access to basic insurance and minimally concerned with the provision of medical care itself. Medical inequalities are perpetuated in many ways besides access to basic insurance. Long after any legislation takes effect, there will still be millions in the United States with little access to medical care. Thus the legislation's passage would not affect the argument of this paper.

generalized from the program presented here. If future research indicates that some means of detecting and treating cancer is better than the procedures covered by Stand Against Cancer, the logic of this argument would hold. Applications include:

- Blood pressure measurement for hypertension
- The CAGE questionnaire or alcohol use disorders identification testing for risk of liver cirrhosis, pancreatitis, and cancer of the mouth, lung, or larynx
- Dental examinations for oral cancer
- Developmental assessments for a variety of early childhood developmental delays
- Fasting plasma glucose testing for type 2 diabetes
- Fecal occult blood testing, sigmoidoscopy, or colonoscopy for colorectal cancer
- Lipid measurement for coronary heart disease
- Newborn hearing screening for hearing loss
- Purified protein derivative skin testing for tuberculosis
- Urine testing for gonorrhea and chlamydia
- A combination of vision tests for amblyopia, strabismus, and refractive errors
- Any of several HIV tests for HIV
- Many others

These procedures vary widely in cost and recommended frequency, yet the model described below is viable for all of them. To apply these insights to all of primary care, or to all of health care, would require a higher level of generality than that on which this paper operates. The intervention model proposed here maximizes the accessibility of health care by mitigating both the macro and micro-level social factors that negatively impact accessibility. It has four service components: excluded populations, entry-level services for no charge, full linkage to diagnostic and treatment services, and accessible nurse case management or patient navigation.

1. Excluded populations: Limited resources have maximum value when applied to those in greatest need. In health care, this means targeting those who are marginalized from the delivery of services. Defining this group requires a macro analysis of the social conditions under which medical care is not provided. The qualifications for services should be based on those conditions. For example, Stand Against Cancer has limited its eligibility to uninsured women below 200 percent of the federal poverty level; more resources could allow an expanded scope.

2. Services for no charge: Eliminating the barrier of cost requires free service, which in

turn requires funding. Stand Against Cancer used private funding as seed money, followed by a grassroots coalition approach that inspired the state government to invest more heavily in these services (see Shapiro et al. 2006). This type of program will be ineffective if free services are not consistently available. Charging patients after funding runs out for care that was previously free violates both basic fairness and patient confidence. ACHN maintains free services at its sites even when grant money is exhausted, providing underserved patients with the vital guarantee of accessible services at its own cost. A woman of very low income is far less inclined to spend five dollars for a screening than to spend nothing. This is not a trivial point; in mathematics the difference between zero and one dollar is the same as that between one and two dollars. In sociology that difference is far greater; a price, however low, has a qualitatively different meaning to a typical person than no price. As one town hall participant succinctly put it: "You don't go if you have to pay" (Metro Chicago Breast Cancer Task Force 68). Cost prohibition naturally becomes more severe at lower incomes. Discounted services improve access in a mathematical sense, but free services do so in a sociological sense.

3. Full linkage to diagnostic and treatment services: Screening or other entry-level services are not useful unless they effectively link the patient to diagnostic follow-up and treatment when necessary. The same macro and micro social and economic barriers to screening also exist for diagnostic and treatment services. To be successful, a program must address barriers to all medically necessary services, not just some of them. The three program portions—screening, diagnostic, and treatment in the case of cancer—should be proportional in scale to avoid backlogs that result in delayed treatment.

4. Accessible nurse case management or patient navigation: It may be possible, but it is not easy to imagine how a program with various referrals to and from several sites (let alone the 77 Chicago-area locations of Stand Against Cancer) could ensure a high level of compliance with complex diagnostic algorithms and access to central treatment without professional patient navigation. Without effective navigation, the confusion and frustration expressed by town hall participants in Table 8 becomes common. At a minimum, patient navigation coordinates a complex treatment process. At its best, patient navigation combines a major enhancement of clinical care with clinically informed social work. Like social work, it can address an exponentially greater range of access barriers in a way specific to each patient. In nursing terms, it is patient-centered in that it "recognizes both the uniqueness of patients and the

Table 8: Selected Testimonials from Underserved Chicago Women with Abnormal Results

- *[After finding a lump] It seemed like time stood still because it took two weeks for me to make an appointment to see my gynecologist ... then to see the breast surgeon ... then to get the bone scan ... to get the CT scan ... then another test and another test ... I was like 'When do I get treated?'*
- *I have good insurance...you would not believe that I had to keep calling my nurse to get my results ... the nurse wouldn't call me back ... I had to call my primary care doctor to get him to put the order through ... I was frustrated ... here I have good insurance ... how are those people who don't have insurance ... how are they managing?*
- *After she [a friend] was diagnosed with breast cancer, the problem came when they pushed the papers in her face and said go here. Since the doctor treated it so lightly, the patient won't follow-up with her care, she thinks it's a little thing and the cancer might go away.*

(Metro Chicago Breast Cancer Task Force 2007:73, 36, 32)

multidimensionality of human existence" (Lauver et al. 2002:246). While components 1, 2, and 3 of this model use mechanical solidarity, this one uses organic solidarity in Durkheim's sense (see Durkheim 1933:83-6). The navigator assesses the micro social factors impacting each particular patient—e.g. transportation, child care, previous negative experiences with health care, generalized or specific anxiety, and other logistic or psychological conditions—and addresses them in a care plan developed collaboratively with the patient. The same navigator has clinical training and explains in detail the significance of each step in the diagnostic process. For example, Stand Against Cancer uses registered nurses as case managers; as clinicians, they can make modifications to align the patient's needs with the clinical protocols, e.g. setting timeframes or clarifying doctor orders. Navigation has been shown to significantly increase adherence to cancer treatment (Cady et al. 1998).⁷

These four service components, if implemented for a variety of health care procedures, could significantly improve access for those currently excluded from the health care system. Taken in isolation, none of them are original, but together and in light of the clinical success and cost-effectiveness of the Stand Against Cancer program, they merit fresh consideration. This model and the program from which it derives are based on a sociological view of medical care. The first component mitigates macro social barriers to care; it identifies the population least likely to receive the relevant services based on gaps of coverage in the overall medical field. The second component accounts for the social meaning of cost. The third recognizes that the same

⁷ I lack the medical expertise to judge the importance of nurse case management as opposed to non-clinical patient navigation for non-cancerous conditions.

barriers to screening also exist for diagnostics and treatment. The fourth organically addresses the micro social factors that the mechanical parts of the program structure do not by bringing social work resources and clinical expertise together to plan care for each patient individually.

Cost-Effectiveness Metrics

Above, I used cost per detection (total cost divided by total cancers plus precancers detected) to measure Stand Against Cancer's cost-effectiveness. Among the possible quantifiable elements of the program, this was the least problematic and most informative. Nevertheless, this metric is not without limitations. Cost per detection ignores the intangible value of screening patients who do not have cancer, assuming no value in a screening process that does not result in a cancer diagnosis. In fact, not only is there an emotional benefit in believing oneself to be cancer free, there are also public health benefits. For instance, many Stand Against Cancer patients were not previously participating in the health care system, and these women now have a relationship with a primary care physician and familiarity with how to access services. Providers, meanwhile, are creating a medical history to which they can refer if the woman returns in the future; this data is especially valuable to radiologists, who interpret mammograms more effectively when prior images are available (Burnside et al. 2002). In at least these ways, Stand Against Cancer and other screening programs have value independent of cancer detection.

Evaluators should therefore exercise care in how they interpret cost per detection. It indicates a program's cost-effectiveness (subject to the limitation just discussed), but not necessarily that program's operational efficiency. This is because the cost per detection metric favors screening programs that serve mostly patients who do not regularly screen. In two otherwise comparable populations, cancer incidence will be higher among a population that does not regularly screen compared to a population that does. While long-term cancer incidence is the same, incidence at the time of screening is higher among the non-screening population. The latter's cancers have not been detected in proportion to their incidence, and have accumulated, so to speak, in the population. The cost per detection method fails to control for this difference. For this reason, programs that serve low-income uninsured women who are less likely to screen regularly would be expected to appear more efficient than otherwise comparable programs serving upper middle class insured women who screen more regularly. This difference in population served makes Stand Against Cancer and programs like it more cost-effective than mainstream health care. But such programs are not necessarily more operationally efficient on

this basis alone.

CONCLUSION

All women are entitled to a full range of medical care, including the life-saving practice of regular breast and cervical cancer screening. Until access to these services is universally available, effective care can still be delivered to many low-income uninsured patients. Stand Against Cancer, a Chicago-area program funded by the state of Illinois, provided over 46,000 screenings, detected over 3,000 abnormal results, and diagnosed over 150 cancers and precancers in two years. Stand Against Cancer demonstrates that providing excluded populations with free screening linked to diagnostics through patient navigation is a clinically effective and cost-effective model for detecting breast and cervical cancer. This model might be similarly effective for detecting a variety of other conditions among the same population.

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