

Health Promotion Interventions for Disadvantaged Women: Overview of the WISEWOMAN Projects

JULIE C. WILL, Ph.D., M.P.H.,¹ ROSANNE P. FARRIS, Ph.D., R.D.,¹
CHARLENE G. SANDERS, M.P.H., R.D.,¹ CHRISANDRA K. STOCKMYER, M.P.H., R.D.,¹
and ERIC A. FINKELSTEIN, Ph.D.²

ABSTRACT

Background: The Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) program aims to remove racial and ethnic disparities in health by addressing the screening and intervention needs of midlife uninsured women. This paper describes the WISEWOMAN program requirements, the design of the 12 projects funded in 2002, the use of a standardized data reporting and analysis system, risk factors among participants, effective behavioral strategies, and plans for the future.

Methods: The WISEWOMAN demonstration projects are examining the feasibility and effectiveness of adding a cardiovascular disease (CVD) prevention component to the early detection of breast and cervical cancer. Women aged 40–64 are eligible if they are enrolled in the National Breast and Cervical Cancer Early Detection Program (NBCCEDP) in selected U.S. states and are financially disadvantaged and lack health insurance. The primary outcome measures are blood pressure, lipid levels, and tobacco use. Intermediate measures include self-reported diet and physical activity, measures of readiness for change, and barriers to behavior change.

Results: During 2002, the 10 projects that were fully operational screened 8164 financially disadvantaged women and developed culturally and regionally appropriate nutrition and physical activity interventions for a variety of racial and ethnic backgrounds. Twenty-three percent of the women screened had high total cholesterol, with 48% of these being newly diagnosed. Thirty-eight percent of the women had high blood pressure, with 24% being newly diagnosed. Approximately, 75% of participants were either overweight or obese, and in some sites up to 42% were smokers.

Conclusions: The WISEWOMAN demonstration projects have been successful at reaching financially disadvantaged and minority women who are at high risk for chronic diseases. These projects face challenges because they are generally implemented by safety net providers who have limited resources and staff to conduct research and evaluation. On the other hand, the findings from these projects will be especially informative in reducing health disparities because they are conducted in those settings where the most socially and medically vulnerable women receive care.

¹Centers for Disease Control and Prevention, Division of Nutrition and Physical Activity, Atlanta, Georgia.

²RTI International, Health, Social and Economics Research, Research Triangle Park, North Carolina.

INTRODUCTION

IMAGINE A WORLD WHERE ANY WOMAN can access preventive health services and gain the wisdom to improve her health. This is the vision promoted by the Well-Integrated Screening and Evaluation for Women Across the Nation (WISEWOMAN) program. To achieve this vision, fundamental changes in our society's healthcare systems are needed. At present, roughly 1 in 5 working-age women lacks health insurance,¹ and minority patients, even when insured, are less likely than whites to enjoy a consistent relationship with a provider.² The lack of health insurance and of a usual source of care has been described by the American Society of Internal Medicine (American College of Physicians) and the Institute of Medicine as a barrier to receiving important preventive care.^{1,3} Ensuring access to preventive health services, therefore, requires expanding healthcare coverage and ensuring consistent and trusting relationships between providers and patients. However, research on racial and ethnic disparities in healthcare indicates that even after accounting for insurance and income, some social groups still receive unequal treatment.³ The reasons for these disparities are complex and may be occupational, cultural, or linguistic. Thus, preventive healthcare strategies that are sensitive to the economic and cultural context of women's lives are also needed.

The WISEWOMAN program was authorized by Congress in 1993 and funded in 1995. Because they recognized an opportunity to increase the provision of preventive health services to financially disadvantaged and uninsured women, the U.S. Congress asked the Centers for Disease Control and Prevention (CDC) to develop and evaluate the provision of cardiovascular disease (CVD) and other prevention services to women who were already attending the National Breast and Cervical Cancer Early Detection Program (NBC-CEDP). In response to this request, CDC invited state and territorial departments of health and tribal agencies to design creative strategies to add CVD screening and lifestyle interventions to their breast and cervical cancer screening programs.

During Phase One of the WISEWOMAN program (1995–1998) (Fig. 1), awards were given to three state health departments (North Carolina, Massachusetts, and Arizona) to conduct “enhanced” projects (i.e., projects involving research with control groups, described in detail later).

Phase Two began in 1999, when Congress authorized expansion of the WISEWOMAN program, and monies were awarded for “standard” projects (i.e., projects that test feasibility without the use of control groups) as well as enhanced projects. As a result of the expanded competition, 12 state and tribal health agencies now operate WISEWOMAN projects (Fig. 2).

Published results from the first phase of WISEWOMAN indicated that it is appropriate but sometimes challenging to expand breast and cervical cancer early detection programs (BCCEDP) to include screening and interventions to lower CVD risk factors.^{4,5} Results showed that WISEWOMAN interventions can increase physical activity and improve nutrition.^{6–8} In all three programs, although differences by intervention groups were not apparent, participants appeared to have improvements in some biological risk factors after 1 year. In North Carolina, the average drop in cholesterol was 7–8 mg/dl. Because both intervention groups experienced the same drop in cholesterol, the improvement could not be attributed to the more intensive intervention.⁹ In Massachusetts and Arizona, the percentage of women with high blood pressure also dropped for all groups between baseline and 1-year follow-up.^{6,7} Challenges to BCCEDP expansion included healthcare providers who felt overburdened by research and newly funded BCCEDP projects that lacked the stability to add yet another set of program requirements.⁵

Important remaining questions are being addressed in the second phase of WISEWOMAN. For example, what is the burden of risk factors among the diverse populations served by WISEWOMAN? How are the WISEWOMAN projects perceived by participants and providers? Which intervention strategies are especially effective in reducing CVD risk factors and improving the ability of women to make behavioral changes? What approaches are particularly successful in influencing multiple social levels (e.g., individuals, families, and communities)? What are the costs of conducting the WISEWOMAN projects? Some of these questions are addressed in this paper, others are discussed in the papers that follow in this special supplement on the WISEWOMAN program, and some questions will be answered in the future.

In this overview, we provide information on WISEWOMAN program requirements, the design of 12 currently funded projects, the use of

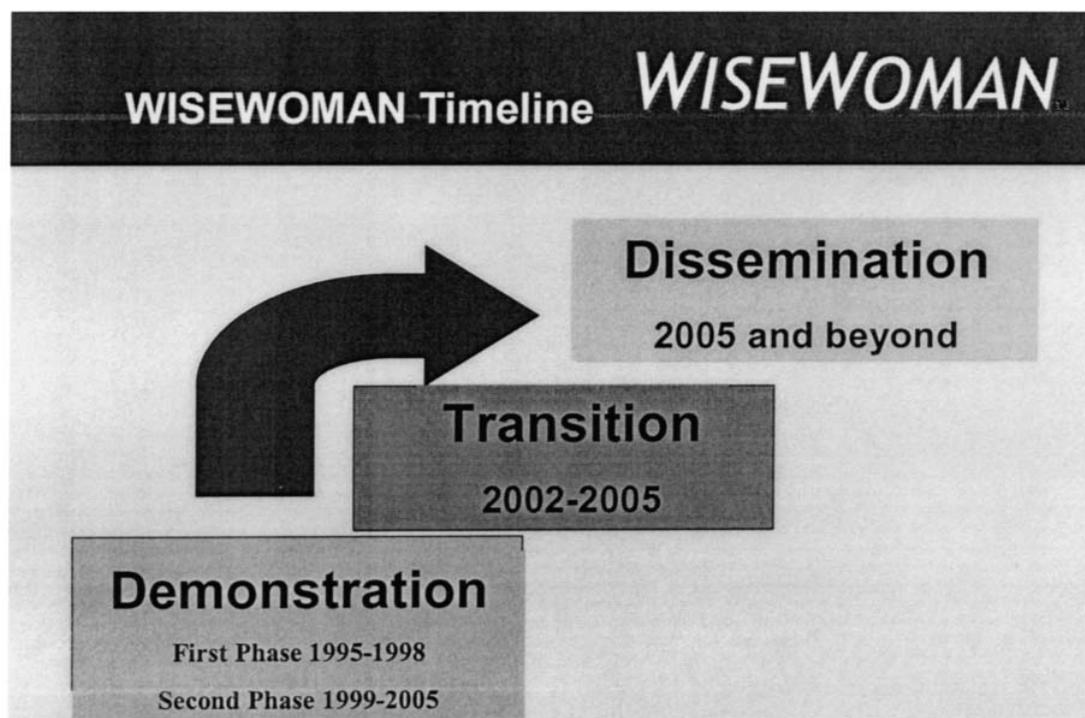


FIG. 1. The federal WISEWOMAN program: Phases and timeline.

standardized data to allow comparisons across projects, the burden of risk factors in our study populations, effective behavioral strategies, and plans for the future. Ultimately, approaches that prove feasible and cost-effective in the WISEWOMAN program will aid the public health community in combating disparities in access to preventive healthcare and improving knowledge and skills to effect behavioral change.

PROGRAM REQUIREMENTS

To fulfill the vision of the WISEWOMAN program, funds are provided for preventive health screenings, appropriate medical referrals, and lifestyle interventions to women aged 40–64 who have participated in the NBCCEDP.¹⁰ Federal dollars are provided to CDC, which then uses at least 80% of the money to fund state and territorial health departments and tribal agencies to develop the WISEWOMAN services. CDC uses the other 20% to fund universities or private contractors to conduct additional program activities, such as evaluation and development of interventions. CDC also funds a small group of in-house staff to provide scientific and programmatic ad-

vice to recipients of WISEWOMAN funds. Thus, the federal WISEWOMAN program relies heavily on paid partners outside of CDC to fully develop the program. Currently, most of these partners are located in state health agencies. Although Congress prohibits the use of federal monies for treatment, project partners are required to develop a treatment plan when women have abnormal screening results.

Screening

The WISEWOMAN projects are required to screen for high blood pressure and high cholesterol levels and are allowed to screen for other clinical conditions, such as abnormal blood glucose and overweight or obesity. All screenings must be performed according to recommendations published in national clinical guidelines.^{11–14} In many of the projects, personnel also conduct written behavioral assessments to detect tobacco use, poor dietary habits, sedentary lifestyle, or high risk of osteoporosis. In addition to paying for specified screening tests, the WISEWOMAN program provides monies for confirmation of abnormal screening results and an annual follow-up examination. Some projects are

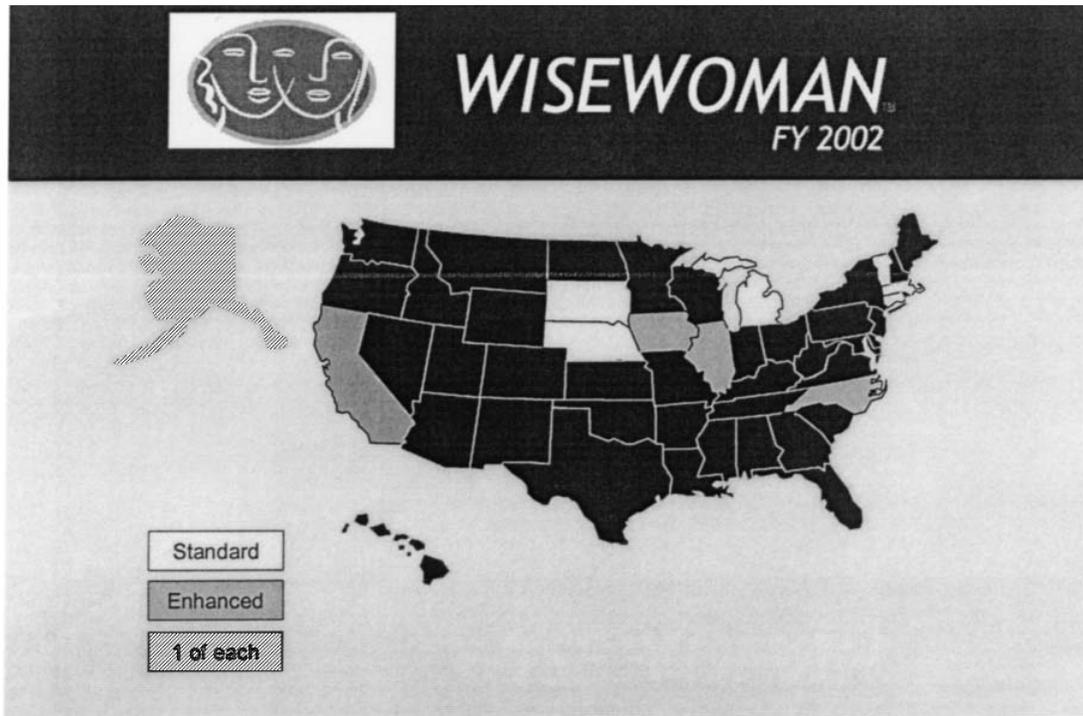


FIG. 2. Locations of WISEWOMAN projects funded in 2002.

allowed to pay for a 6-month visit to collect needed data for research purposes.

Medical referral

All WISEWOMAN participants who have high blood pressure, high cholesterol, or high blood glucose according to national guidelines will require further medical attention. At a minimum, the WISEWOMAN projects must ensure that women are referred for a diagnostic examination to confirm screening results. Staff are urged to send a medical referral form along with a letter that describes the intervention and the participant's clinical results. The referral form often will state the reasons for the referral and include the clinician's initial assessment and recommendations. To help track referrals, the WISEWOMAN program strongly recommends that clinicians keep a copy of the form and send the original back to the referring agency. At all projects, the staff are responsible for documenting that a referral was made.

Lifestyle interventions

According to national clinical guidelines, the first step toward improving abnormal clinical values is usually the provision of lifestyle interven-

tions. WISEWOMAN project staff develops lifestyle interventions targeted toward the population served, that is, multiethnic, financially disadvantaged women. Staff are required to review the existing literature and select scientifically sound, culturally relevant interventions that will be most effective for their populations. Thus, lifestyle interventions vary across projects.

Evaluation

WISEWOMAN projects include an evaluation or research component. Project staff must report 23 standardized data elements beyond what is already required by the NBCCEDP. These minimum data elements (MDEs) are reported to the Research Triangle Institute (RTI) twice a year. In addition, the project staff is expected to design physical activity and nutrition assessments that measure the effects of the intervention. For example, if the intervention staff encourages women to walk more each day, they may assess walking time as a measure of success. The assessments are not standardized across projects but must be reported to RTI. Projects may collect as much additional information as they wish.

For all projects, the primary outcome measures

are blood pressure and lipid levels. Intermediate measures include self-reported diet and physical activity, measures of readiness for change, and barriers to behavior change, which are assessed as modifiers of the intervention effect.

PROJECT DESIGN

Enhanced projects

Enhanced projects are designed to determine the most effective lifestyle interventions for underserved women by comparing women who receive an enhanced intervention with women who receive a minimum intervention or usual care. Assignment to the minimum or enhanced intervention is either by group (clinic or county) or by woman; for both designs, the unit of observation is the individual woman. All enhanced projects report MDEs to RTI but also collect additional information to support further analyses. The group-randomized design effect is accounted for statistically in all analyses.¹⁵

Although details of the minimum intervention vary by project, all enrolled women receive baseline screening for CVD risk factors and minimal on-site counseling, education, referral, and follow-up using established protocols.¹¹⁻¹⁴ Repeat screening is recommended at 6 and 12 months after the initial screening. Women enrolled in the enhanced intervention receive all services of the minimum intervention plus a specially designed education and intervention program tailored to the population served. Some projects have employed a third intervention group that is even more intensive and may include services such as those provided by community health workers.

In 2002, five WISEWOMAN enhanced projects operated in selected breast and cervical cancer screening sites in California, North Carolina, Illinois, Iowa, and the Southcentral Foundation in Alaska (Table 1). As in Phase One, these enhanced projects continue to conduct research to determine whether the enhanced intervention has a greater impact on risk factors than the minimum intervention. All five projects have developed intervention strategies tailored to participants' racial and ethnic profile and age group (40-64 years).

Standard projects

Standard projects are designed to determine the best operational methods for delivering CVD

screening and evidence-based lifestyle interventions to eligible uninsured women. Standard projects are similar to the enhanced intervention component of enhanced projects because they provide services that improve upon the usual care at each clinic. However, standard projects do not employ an experimental design with a control group. Participants in standard projects receive baseline screening for CVD risk factors, on-site counseling, education, referral, and follow-up, with repeat screening at 12 months. All activities are based on established protocols.¹¹⁻¹⁴ In addition, standard projects offer a specially designed education and intervention program tailored to the population served. All projects report MDEs to RTI. In 2002, the seven funded standard projects operated in selected breast and cervical cancer screening sites in Connecticut, Massachusetts, Michigan, Nebraska, South Dakota, the Southeast Alaska Regional Health Consortium (SEARHC), and Vermont (Table 2).

RISK FACTOR BURDEN

In 2002, the 10 projects that were fully operational screened 8164 financially disadvantaged women (Tables 3 and 4). Women have been screened from a variety of racial/ethnic groups. North Carolina, Connecticut, and Michigan have screened high proportions of African Americans (39%, 28%, and 17%, respectively), and Connecticut, Massachusetts, and Nebraska have been effective in reaching Hispanic/Latina women (25%, 28%, and 11%, respectively). All of the women screened by Alaska's Southcentral Foundation have been Alaska Natives. The WISEWOMAN projects, therefore, are effective in reaching minority women.

Data on various chronic disease risk factors are available for some Phase Two WISEWOMAN projects for 2002 (Tables 3 and 4). In all states, substantial proportions of women screened (17%-37%) had high total cholesterol. However, many were unaware of their cholesterol status, ranging from 24% at SEARHC to 60% in Massachusetts and South Dakota. Approximately half (40%-55%) of participants in North Carolina, Iowa, Alaska's Southcentral Foundation, Connecticut, Michigan, and Nebraska were not aware of having high cholesterol. Women in North Carolina showed the highest prevalence of hyper-

TABLE 1. SELECTED FEATURES OF THE ENHANCED WISEWOMAN^a PROJECTS: PHASE TWO (2002)

	California	North Carolina	Illinois	Iowa	Southcentral Foundation
Year first funded	2001	1995	2001	2000	1999
Lead agency	California Department of Health Services	North Carolina Department of Health and Human Services	Illinois Department of Public Health	Iowa Department of Public Health	Alaska Native Medical Center
Key partners	University of California at Davis, University of California at San Francisco, American Heart Association Western States Affiliate (CA chapter), American Cancer Society (CA chapter)	University of North Carolina Schools of Public Health and Medicine	University of Illinois at Chicago, The Cooper Institute	University of Iowa at Iowa City, Iowa State University Extension Services at Ames	University of North Carolina at Chapel Hill, "Take Heart Alaska" CVD prevention program, Alaska Primary Care Association's Statewide Women's Health Partnership, Alaska Dietetic Association, Alaska Area Diabetes Program
WISEWOMAN sites (number and type)	5 pilot sites have been selected; full-scale study sites to be selected later	39 local health departments serving 40 of 100 North Carolina counties; one community health center serves as research site	3 county health departments and 1 hospital that comprise 20 sites and represent suburban and rural counties	15 sites including health departments, hospitals, visiting nurse associations, home health agencies, and women's services agencies	1 family medicine clinic involving 23 physicians at Southcentral Foundation serving Anchorage Bowl area
Site selection and method of assignment to interventions ^{b,c}	Participants at pilot sites randomly assigned to EI or MI	Counties selected based on ability of BCCEDP site to meet screening goals; all health department sites receive EI; at community health center (selected based on BCCEDP participation and willingness to implement research design), women randomized to EI or MI	Counties selected based on strong BCCEDP performance and infrastructure, and to achieve geographic mix; women in each site randomized to EI or MI	Counties selected based on strong BCCEDP performance, and randomly assigned to EI or MI	Participants randomly assigned to EI or MI; the EI is offered to the MI group after 1 year

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TABLE 1. (CONT.) SELECTED FEATURES OF THE ENHANCED WISEWOMAN^a PROJECTS: PHASE TWO (2002)

	California	North Carolina	Illinois	Iowa	Southcentral Foundation
Participant eligibility for intervention	Latina BCCEDP participants aged 40–64 who are screened with high serum cholesterol or elevated systolic or diastolic blood pressure, or who are taking medications for such conditions at the time of screening	BCCEDP participants aged 40–64 who are screened with high serum cholesterol or other abnormal lipids, elevated systolic or diastolic blood pressure or abnormal glucose, or a personal history of these conditions	All recruited BCCEDP participants aged 40–64	All recruited BCCEDP participants aged 40–64	All recruited BCCEDP participants aged 40–64 residing within 50 miles of primary care center
Participant recruitment strategies ^{c,d}	Free CVD screening offered when Latina BCCEDP clients come to clinic for breast and cervical examination; also conduct community outreach and mailings	Free CVD screening offered when BCCEDP clients come to clinic for breast and cervical examination	Free CVD screening offered when BCCEDP clients come to clinic for breast and cervical examination; also use fliers, personalized phone calls, and recruitment festivals	Free CVD screening offered when BCCEDP clients come to clinic for breast and cervical examination; fliers that are mailed as reminders for BCCEDP repeat screenings include an announcement regarding CVD services	Recruited at Southcentral Foundation through the BCCEDP and family medicine providers; also use letters and phone calls to eligible women and community advertising (e.g., posters, public service announcements, presentations)
Intervention participation rate	Data not yet available	89% of health department participants received at least one lifestyle intervention; data not yet available for community health center research site	Data not yet available	Data not yet available	78% of women randomized to the intervention attended at least 1 session; 65% attended at least 6 of 12 sessions
Features of baseline screenings and risk factor assessments ^e	Hypertension, hypercholesterolemia, overweight, personal and family medical history, cigarette smoking, poor diet, physical inactivity	Hypertension, hypercholesterolemia, other abnormal lipids, abnormal glucose values, overweight, personal and family medical history, cigarette smoking, poor diet, physical inactivity	Hypertension, hypercholesterolemia, high triglycerides, abnormal glucose values, abnormal pulse, overweight, abdominal obesity, personal and family medical history, cigarette smoking, poor diet, physical inactivity	Hypertension, hypercholesterolemia, overweight, personal and family medical history, cigarette smoking, poor diet, physical inactivity	Hypertension, hypercholesterolemia, high triglycerides, other abnormal lipids, abnormal glucose values, overweight, abdominal obesity, abnormal electrocardiogram, abnormal kidney function, abnormal thyroid

Features of MI	CVD risk factor screening, diagnosis, and referral according to national clinical guidelines, and health education based on usual care offered at clinical site using an educational pamphlet (e.g., American Heart Association)	All health department sites receive EI; the research site's MI consists of CVD risk factor screening, diagnosis, and referral according to national clinical guidelines, and health education using an educational pamphlet (e.g., American Heart Association)	CVD risk factor screening, diagnosis, and referral according to national clinical guidelines, and health education using an educational pamphlet (e.g., American Heart Association; National Heart, Lung, and Blood Institute)	CVD risk factor screening, diagnosis, and referral according to national clinical guidelines, and health education pamphlets preselected by state project staff	function, personal and family medical history, tobacco use, poor diet, physical inactivity
Features of EI (nutrition and physical activity) and theoretical foundations	More frequent clinical measurements, plus A New Leaf . . . Choices for Healthy Living ⁸ or the Spanish version (¡Vida Saludable, Corazón Contento!); counseling facilitated by bilingual community health workers	Same clinical services, plus A New Leaf . . . Choices for Healthy Living ⁸ ; in the community health center site, women also receive follow-up phone calls and reminders from community health workers, and referrals to community resources	Same clinical services, plus a 12-week nutrition and physical activity group intervention called Women with Heart (based on Project Active ¹⁶); (a Spanish version, Mujeres con Corazón, is being developed); sessions with health educators focus on portion sizes, food labels, stress management, and moderate physical activity	A 12-session group format led by Cooperative Extension nutritionists; each session includes a healthy snack, topic presentation, brief physical activity, skill-building activity, behavior change/maintenance activity, goal-setting activity, and evaluation; nutrition topics are based on the DASH diet ¹⁷	A 12-session group covering traditional wellness, nutrition, physical activity and tobacco education topics, team-taught by nutritionists, exercise physiologists, and health educators; includes Traditions of the Heart, a cultural adaptation for Alaska Natives of A New Leaf Living ⁸ ; includes structured diet and physical activity assessments, individual counseling, and tailored goal-setting by health educators
Through the use of social cognitive theory and the socioecological model, intervention emphasizes individual tailoring, self-efficacy, self-monitoring, readiness to change, small achievable steps, social support, collaborative goal-setting, and overcoming barriers	Through the use of social cognitive theory and the socioecological model, intervention emphasizes individual tailoring, goal setting, social support, and identification of barriers and perceived benefits	Intervention is designed to remove barriers, increase social support, and improve self-efficacy	Intervention is designed to remove barriers, increase social support, and improve self-efficacy	Intervention addresses social support and barriers to change	

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TABLE 1. (CONT.) SELECTED FEATURES OF THE ENHANCED WISEWOMAN^a PROJECTS: PHASE TWO (2002)

	California	North Carolina	Illinois	Iowa	Southcentral Foundation
Features of EI (tobacco control)	Smoking cessation module from New Leaf (and Spanish version) used to provide cessation tips, plus referral to community agency	Smoking cessation module from New Leaf used to provide cessation tips, plus referral to community agency or local smoking cessation resources	Referral to tobacco cessation program if participant expresses desire to quit	Referral to smoking cessation program for participants with self-disclosed smoking behavior; reimbursement given to provider who delivers smoking cessation program	Using Traditions of the Heart, participants complete tobacco use assessment (cigarette smoking and tobacco chewing), receive individual counseling, and set goals to stop using tobacco; each intervention session covers risks associated with tobacco use and benefits of quitting; tobacco users also referred to tobacco clinic for counseling, quit aids, and other services
Main outcomes	Hypertension and hypercholesterolemia	Hypertension and hypercholesterolemia	Hypertension and hypercholesterolemia	Hypertension, hypercholesterolemia, and obesity	Hypertension and hypercholesterolemia
Comparability between intervention groups at baseline	Data not yet available	Data not yet available for research site	Data not yet available	Data not yet available	Data not yet available for full-scale study

^aWell-Integrated Screening and Evaluation for Women Across the Nation.

^bEI, enhanced intervention; MI, minimum intervention.

^cBCCEDP, Breast and Cervical Cancer Early Detection Program.

^dCVD, cardiovascular disease.

^eSome baseline screenings are paid for by WISEWOMAN and others by matching funds.

^fDASH, Dietary Approaches to Stop Hypertension.

TABLE 2. SELECTED FEATURES OF THE STANDARD WISEWOMAN^a PROJECTS: PHASE TWO (2002)

	Connecticut	Massachusetts	Michigan	Nebraska	South Dakota	SEARHC ^b	Vermont
Year first funded	2000	1995	2000	2000	2000	2000	2000
Lead agency	Connecticut Department of Public Health	Massachusetts Department of Public Health	Michigan Department of Public Health	Nebraska Department of Public Health	South Dakota Department of Public Health	SEARHC Community Health Services Division	Vermont Department of Public Health
Key partners	Connecticut Chapter of American Heart Association, Yale Prevention Research Center, InfoLine (tobacco cessation)	New England Coalition for Health Promotion and Disease Prevention, American Heart Association, regional outreach contractors, YWCA, Visiting Nurse Association	Michigan Public Health Institute, healthcare providers, federally qualified health centers, local health departments	University of Nebraska Medical Centers, College of Pharmacy, American Heart Association, Cooperative Extension, parish nurses, tribal organizations, outreach workers	Indian Health Service, pharmaceutical companies, Avera-McKenman Cardiac Rehabilitation and Prevention Program, Wellmark Blue Cross Blue Shield of South Dakota, American Cancer Society	University of Alaska at Sitka, Take Heart Alaska CVD prevention program, public health nurses, Alaska Tobacco Control Alliance	Primary Care Association, American Heart Association, Cardiovascular Disease Coalition, Area Health Education Center, Community Health Center, Richford Health Center, Northern Counties Health Care, Vermont Coalition of Clinics for the Uninsured
BCCEDP sites (number and type) ^d	18 sites, including hospitals, a federally funded community health center, and Planned Parenthood	34 Massachusetts Women's Health Network medical provider sites	21 agencies with subcontracted providers, including 20 local health departments and the Karmanos Cancer Institute	More than 600 clinic sites form a network of providers, including federally funded community health centers, family practice agencies, county health departments, and universities	735 providers at 228 sites, including private clinics, hospital-associated health systems, Indian Health Service clinics, and federally funded community health centers	12 sites total: 8 provide breast and cervical cancer services to Alaska Natives; 2 additional sites provide cervical cancer services only to Alaskan Natives; 2 clinics provide	Approximately 800 providers at more than 250 sites, including private providers, hospitals, and community health centers

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TABLE 2. (CONT'D) SELECTED FEATURES OF THE STANDARD WISEWOMAN^a PROJECTS: PHASE TWO (2002)

	Connecticut	Massachusetts	Michigan	Nebraska	South Dakota	SEARCH ^b	Vermont
WISEWOMAN sites (number and type)	9 sites, including hospitals and a federally funded community center	10 sites, including federally funded health centers, hospitals, clinics, private individual and group practices, clinics, and visiting nurse associations	7 sites, including local health departments, private health care providers, and federally funded community health centers	All BCCEDP sites (>600)	More than 70 BCCEDP sites	comprehensive services to non-native clients 7 comprehensive sites and one cervical cancer screening site	6 pilot sites (mainly federally funded community health centers)
Participant eligibility for WISEWOMAN	BCCEDP women aged 50–64 at or below 200% of poverty level with no health insurance	BCCEDP women aged 40–64 who meet financial eligibility; recruited for BCCEDP and WISEWOMAN at the same time	BCCEDP women aged 40–64 at 250% of poverty level, under- or uninsured and without Medicare Part B or Managed Care Medicaid	BCCEDP women aged 40–64	BCCEDP women aged 30–64; the age criterion has been lowered for demonstration purposes	BCCEDP women aged 40–64 (Native or non-Native depending on the site, but 90% are Alaska Native or American Indian)	BCCEDP women aged 40–64
Participant eligibility for intervention	Women with abnormal blood pressure or cholesterol or who use tobacco	Women with abnormal blood pressure or cholesterol, and other CVD risk factors	Women with normal screening results receive basic information, and are offered one face-to-face lifestyle contact; women with abnormal results receive full intervention	All women regardless of screening results	Preference given to women with abnormal screening results; women with normal values can self-refer to intervention	All women regardless of screening results	All women regardless of screening results
Participant recruitment strategies	Outreach workers, community presentations, mailouts; also recruit when women return	Advertised via media, posters, fliers, presentations	Outreach workers, fliers, information sheets	Identified through BCCEDP database, letters sent to invite participation; outreach	Identified through BCCEDP database; letters sent to invite participation	Identified through BCCEDP database, letters sent or phone calls made to invite participation	Letters sent to women 40–64 years at the community health centers; women call

Intervention participation rate	for annual BCCEDP examination	18% completed at least 1 session, 13% completed all sessions	78% received risk reduction counseling, 38% received 1 lifestyle intervention, 7% received 2-3 sessions	55% received at least 1 lifestyle session; too early to determine percentage completing all sessions	Data not yet available	workers used for hard-to-reach women	toll-free number to determine eligibility Data not yet available
Features of baseline screenings and assessments	Hypertension, abnormal lipid values, abnormal glucose values, abnormal pulse, overweight, physical inactivity, poor diet, cigarette smoking	Hypertension, abnormal lipid values, abnormal glucose values, overweight, physical inactivity, poor diet, cigarette smoking	Hypertension, abnormal lipid values, overweight, physical inactivity, poor diet, cigarette smoking, problematic personal or family health history	Hypertension, abnormal lipid values, abnormal glucose values, overweight, physical inactivity, poor diet, cigarette smoking	Hypertension, abnormal lipid values, abnormal glucose values, abnormal pulse, abnormal kidney function, overweight, abdominal obesity, physical inactivity, poor diet, cigarette smoking	Hypertension, abnormal lipid values, abnormal glucose values, abnormal pulse, abnormal kidney function, overweight, abdominal obesity, physical inactivity, poor diet, cigarette smoking	Hypertension, abnormal lipid values, abnormal glucose values, overweight, abdominal obesity, physical inactivity, poor diet, cigarette smoking
Features of intervention (nutrition and physical activity)	Adaptation of A New Leaf . . . Choices for Healthy Living ⁸ for nutrition; PACE ^e program for physical activity ¹⁸	Individual assessments, education, and lifestyle counseling using the PACE program ¹⁸ ; referred to community-based individual or group interventions on nutrition and physical activity	Promotion of modified DASH ^f diet and moderate physical activity ¹⁷ ; use contracts and incentives	Cooperative Extension nutritionists use ABC for Good Health, ¹⁹ participants receive individually tailored nutrition and physical activity interventions, complete monthly goal assessment, and 10,000 Steps program ^{20,21}	A New Leaf . . . Choices for Healthy Living ⁸ for nutrition assessment and counseling; physical activity intervention modeled after Project Active ¹⁶	Patient educators provide Traditions of the Heart (cultural adaptation of A New Leaf . . . Choices for Healthy Living ⁸ curriculum, referral to a program called Active Living Every Day, and participation in the Governor's Walking Challenge	Individualized counseling by nutritionists using the New Leaf . . . Choices for Healthy Living ⁸ curriculum, referral to a program called Active Living Every Day, and participation in the Governor's Walking Challenge

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TABLE 2. (CONT'D) SELECTED FEATURES OF THE STANDARD WISEWOMAN^a PROJECTS: PHASE TWO (2002)

Features of intervention (tobacco control)	Connecticut	Massachusetts	Michigan	Nebraska	South Dakota	SEARCH ^b	Vermont
	Referred to Connecticut quitline	Referred to Massachusetts quitline	Provided with smoking cessation information and quit kits; may also participate in one face-to-face counseling session and receive 2 phone contacts to support cessation efforts	Cessation classes provided through state health department's health education and promotion division; women also referred to Nebraska quitline	Referred to South Dakota quitline, which includes up to 6 telephone contacts	Referred to American Lung Association's Freedom from Smoking program and Alaska quitline; nicotine replacement therapy available free of charge, one-on-one counseling available through patient educators; project addresses cigarette smoking and tobacco chewing	Referred to Vermont quitline (funded by American Cancer Society); women offered no-cost nicotine replacement therapy

^aWell-Integrated Screening and Evaluation for Women Across the Nation.

^bSoutheast Alaska Regional Health Consortium.

^cCVD, cardiovascular disease.

^dBCCEDP, Breast and Cervical Cancer Early Detection Program.

^ePhysician Assisted Counseling and Evaluation.

^fDietary Approaches to Stop Hypertension.

TABLE 3. RESULTS (JANUARY 1, 2002–DECEMBER 31, 2002) FROM WISEWOMAN ENHANCED PROJECTS: PHASE TWO^a

Variable ^b	North Carolina	Iowa	Southcentral Foundation ^c
Number screened	2317	36 ^d	412
Age, years			
<55	51	56	75
≥55	49	44	25
Race/ethnicity			
White	51	100	0
Black	39	0	0
Hispanic/Latina	6	0	0
American Indian/Alaska Native	3	0	100
Asian	1	0	0
High total cholesterol ^e	26	37	22
Unaware of high cholesterol	42	42	44
Low HDL ^f	18	19	9
Hypertension ^g	54	42	38
Unaware of hypertension	17	27	9
History of diabetes	14	3	10
Estimated coronary heart disease deaths per 1000 women expected in 10 years ^h	24	32	14
Overweight ⁱ	29	42	31
Obese ^j	53	42	47
Smoker	27	42	32

^aCalifornia and Illinois data not yet available.

^bAll data are presented as percentages, except for number screened. Because of missing responses, denominators vary; most variables had few missing responses.

^cLocated in Anchorage, Alaska.

^dIowa did not begin screening until October 2002.

^e≥240 mg/dl.

^f<40 mg/dl.

^gSystolic ≥140 mm Hg or diastolic ≥90 mm Hg or taking medication.

^hBased on a risk projection formula that uses smoking, systolic blood pressure, total cholesterol, and age.

ⁱBody mass index = 25–29.9 kg/m².

^jBody mass index ≥ 30 kg/m².

tension (54%) of any state, and at least one third of participants (35%–44%) were hypertensive in all but two other states. Again, many participants were unaware of their hypertension (9%–27% in enhanced projects and 15%–42% in standard projects). The combined prevalence of overweight and obesity has been extremely high in all projects, affecting nearly 3 of 4 women screened in almost all settings. In one of the Alaska projects (SEARHC), 60% of the women who attended the program in 2002 were obese (body mass index [BMI] ≥ 30 kg/m²). In addition, several projects have reported a high prevalence of smoking during the first year of screening, including 42% in both South Dakota and Iowa. In several other projects, the prevalence of smoking (23%–33%) was higher than the prevalence of 21% for women aged 45–64 in the U.S. population.²²

BEHAVIORAL STRATEGIES

A major goal of the WISEWOMAN program is to determine which behavioral strategies are effective in reducing CVD risk factors among racially and ethnically diverse, underserved, financially disadvantaged women.

Phase One

All three enhanced projects funded during Phase One have completed key analyses. The published results from North Carolina⁸ showed that women who received lifestyle counseling through the enhanced intervention reported less fat in their diets at follow-up than did women who received the minimum intervention. Cholesterol and blood pressure profiles generally im-

TABLE 4. RESULTS (JANUARY 1, 2002–DECEMBER 31, 2002) FROM WISEWOMAN STANDARD PROJECTS: PHASE TWO^a

Variable ^b	Connecticut	Massachusetts	Michigan	Nebraska	South Dakota	SEARHC
Number screened	670	1684	321	1404	921	394
Age, years						
<55	39	72	78	68	86	72
≥55	61	28	22	32	14	28
Race/ethnicity						
White	43	59	77	84	77	0
Black	28	3	17	3	2	0
Hispanic/Latina	25	28	5	11	5	6
American Indian/ Alaska Native	0	0	0	2	14	94
Asian	4	10	1	0	1	0
High total cholesterol ^c	26	20	23	23	17	20
Unaware of high cholesterol	40	60	55	50	60	24
Low HDL ^d	10	8	16	13	17	9
Hypertension ^e	44	24	37	37	25	35
Unaware of hypertension	15	42	26	31	37	26
History of diabetes	11	4	8	9	8	11
Estimated coronary heart disease deaths per 1000 women expected in 10 years ^f	27	14	15	18	11	16
Overweight ^g	36	33	28	26	29	25
Obese ^h	38	26	46	48	42	60
Smoker	17	19	33	23	42	26

^aVermont data not shown because only 5 women were screened during 2002.

^bAll data are presented as percentages, except for number screened. Because of missing responses, denominators vary.

^c≥240 mg/dl.

^d<40 mg/dl.

^eSystolic ≥140 mm Hg or diastolic ≥90 mm Hg or taking medication.

^fBased on a risk projection formula that uses smoking, systolic blood pressure, total cholesterol, and age.

^gBody mass index = 25–29.9 kg/m².

^hBody mass index ≥ 30 kg/m².

proved for both the enhanced and minimum interventions, although the differences between groups were not significant. Results from the Massachusetts and Arizona projects are included in this supplement.^{6,7}

Phase Two

Information from Phase Two about the enhanced and standard WISEWOMAN projects was gathered from original applications, research protocols submitted to CDC for Institutional Review Board approval, and interviews with current project staff (Tables 1 and 2). Baseline results from analyses conducted by RTI with use of the MDE database are summarized in Tables 3 and 4. Additional details about the MDE database are provided in a companion paper in this supplement.²³

Physical activity and nutrition interventions: enhanced projects. The physical activity and dietary

strategies that are being tested in enhanced projects in Phase Two are summarized in Table 1. In general, all strategies are based on key concepts from social cognitive theory²⁴ and the socioecological model,²⁵ including tailoring, self-monitoring, readiness for change, self-efficacy, small achievable steps, social support, collaborative goal setting, and overcoming barriers.

Three of the five projects (California, North Carolina, and Alaska Southcentral Foundation) are using modifications of the *New Leaf... Choices for Healthy Living*,⁸ a structured diet and physical activity assessment and intervention tool adapted and expanded from the *Food for Heart Program*.^{26–28} The physical activity component of *New Leaf* is based on the CDC/American College of Sports Medicine guidelines, which call for daily accumulation of moderate activity (rather than less frequent and more vigorous activity).¹⁴ The *New Leaf* program uses behavior change the-

ory to help counselors and patients remove obstacles to lifestyle modification (e.g., complexity, cost, lack of time, cultural irrelevance) by developing practical strategies to integrate more activity into participants' daily work and household and social activities.

New Leaf was designed for a Southern, multi-ethnic, low-literacy population but has been adapted for other populations; a Spanish-language version (*Vida Saludable, Corazón Contento*) was created for the Hispanic/Latina population in North Carolina. In North Carolina, the project also is assessing whether *New Leaf* supplemented with telephone calls, reminders from community health workers, and referrals to community resources is more effective than the usual care provided by a community health center. The California WISEWOMAN project, which is in the process of developing its intervention, is conducting a pilot test to learn how to modify *Vida Saludable, Corazón Contento* for Hispanic/Latina women in that state and to provide counseling with bilingual community health workers. After the pilot test is completed, the intervention will be tested in additional sites. In Alaska, the Southcentral Foundation is using an adaptation of *New Leaf* called *Traditions of the Heart*. The 12-session program, designed in an interactive group format, includes a Native Alaskan traditional wellness component in each session.

The two other states with enhanced projects have also developed 12-week intervention programs. The Illinois WISEWOMAN project has worked with the Cooper Institute to develop a nutrition and physical activity group program based on *Project Active*,¹⁶ called *Women with Heart*. Illinois staff are also developing a Spanish version of this program. In Iowa, Cooperative Extension nutritionists lead a group format that is based on the Dietary Approaches to Stop Hypertension (DASH) diet.¹⁷

Physical activity and nutrition interventions: standard projects. Four standard projects (Connecticut, South Dakota, Vermont, and Alaska's SEARHC) are using modifications of *New Leaf* in conjunction with other resources. In Connecticut, the project also has adopted the *Physician Assisted Counseling and Evaluation* (PACE) program¹⁸ for physical activity, and in South Dakota, the project has developed a modified version of *Project Active*¹⁶ called *Active Living Every Day*. The Vermont and SEARHC projects supplement *New Leaf*

with group interventions focused on nutrition and physical activity (called "wellness circles" in Vermont).

In the three standard projects not using *New Leaf*, staff have developed a variety of intervention strategies. The Massachusetts WISEWOMAN project uses PACE¹⁸ and also refers women to community-based individual or group interventions on nutrition and physical activity. The Michigan project promotes a modified version of the DASH diet¹⁷ and advocates moderate physical activity incorporated into a woman's daily life, negotiates lifestyle contracts after determining a woman's readiness for change, and employs a variety of incentives to motivate change. In Nebraska, Cooperative Extension nutritionists are administering *ABCs for Good Health* (developed by the U.S. Department of Agriculture and based on the *Dietary Guidelines for Americans*¹⁹) and the *10,000 Steps* program.^{20,21} The Nebraska nutritionists help participants set achievable goals and provide pedometers for feedback on physical activity.

Tobacco control interventions: enhanced projects. In all the enhanced projects, staff assess participants' tobacco use and refer women to either a tobacco cessation program or a state quitline.²⁹ Some projects provide brief counseling, including tips for quitting. Because Native Alaskan women are more likely to use chewing tobacco than are women from other cultures, the Southcentral Foundation WISEWOMAN project targets both cigarette smoking and tobacco chewing. Participants at the Southcentral Foundation complete a tobacco use assessment, receive individual counseling, set goals to stop using tobacco, and may obtain additional counseling at a tobacco cessation clinic. Participants can also request quit aids (e.g., nicotine patches) at no cost.

Tobacco control interventions: standard projects. In all the standard projects, staff refer women to their state quitline.²⁹ In some states, the quitline service includes up to six telephone contacts. Several projects, including those of SEARHC, Vermont, and Nebraska, are able to track women's participation in the quitline program and thereby assess the quitline's impact on smoking cessation rates. Nebraska provides smoking cessation classes through its state health department, and Alaska's SEARHC project partners with the American Lung Association's *Freedom from Smoking* pro-

gram. Two projects (SEARHC and Vermont) offer nicotine replacement therapy at no cost.

DISCUSSION

It is clear that by serving financially disadvantaged, uninsured, and multiethnic women, WISEWOMAN projects are reaching women who are at high risk of developing CVD and other chronic diseases. Our initial baseline results from Phase Two suggest that many of the women enrolled in WISEWOMAN were unaware of their high blood pressure or their high cholesterol before entering the program. Nearly three quarters of the women who attended baseline screenings were overweight or obese, including a 60% prevalence of obesity in one location. The prevalence of smoking was also higher than would be expected in U.S. women aged 45–64.

Because WISEWOMAN projects are located in a variety of settings and serve women from many different cultural backgrounds, each project strives to adapt evidence-based lifestyle interventions to the culture(s) of the women they serve. We have learned that cultural adaptation involves more than simply translating interventions into a different language. It also requires careful formative research to understand dietary and physical activity practices, facilitators and barriers to behavioral change, and cultural norms. After intervention materials are translated into another language, they are back-translated to ensure that the translation is appropriate for the women who will be receiving the intervention. More detail is provided in other papers in this supplement on how materials have been adapted and used in WISEWOMAN projects.

Although WISEWOMAN projects have helped increase physical activity and improve nutrition,^{6–8} it is not entirely clear why our enhanced lifestyle interventions have been less effective in influencing physiological measures (e.g., blood pressure, lipid levels, and anthropometric measures). We suspect that there are critical barriers and facilitators to delivery of complete interventions that, to date, have not been addressed fully in our program. These barriers may include provider skepticism about women's ability to change behavior, social isolation, unsafe neighborhoods, and lack of access to healthful foods. In some locations, for example, women may have to rely on

neighborhood stores that do not stock high-quality, affordable fruits and vegetables or low-fat snacks.

Because many of the barriers that women face are structural, WISEWOMAN is now planning to supplement the current approach with a broader societal approach to improve health behaviors. Borrowing from the socioecological model,²⁵ we are encouraging projects to develop multifaceted interventions that address intrapersonal, organizational, community, and policy influences on health and health behaviors. For example, to strengthen the family and peer support available to participants, some projects now invite family members and friends to attend the interventions. At the organizational level, we are training staff to examine their own attitudes and work collaboratively with women to change their behavior. Organizations are also developing their own creative solutions as a result of receiving WISEWOMAN funding. In North Carolina, for example, a county health department clinic partnered with a community free clinic to extend their operating hours so that WISEWOMAN participants could attend appointments more easily. At the community level, some projects have hired community health workers from participants' neighborhoods to conduct outreach, make telephone calls to encourage attendance at medical examinations and intervention sessions, arrange transportation, help find low-cost medications, and provide other support services. Some projects provide discount passes to encourage exercise in safe environments (e.g., YWCA, local indoor swimming pools) or discount coupons that help women attend community weight loss programs.

As WISEWOMAN projects explore ways to participate as agents of social change, they are building alliances among disadvantaged women and their families, healthcare providers, and neighborhoods. Eliminating social-group disparities in CVD incidence and mortality will likely depend on the strength of these alliances. Our goal in promoting more comprehensive interventions is to empower women to use all available services to facilitate the adoption of a healthier lifestyle. We also hope to garner the social support needed for behavior change, raise providers' expectations, build trust between patients and providers, ensure that healthcare environments effectively address the needs of culturally diverse populations, remove community barriers to a healthy lifestyle, and create advocates

for better healthcare coverage. If WISEWOMAN projects can successfully implement multilevel interventions and demonstrate their effectiveness, this approach is likely to be adopted on a much broader scale. As progress is made toward this goal, the WISEWOMAN program will begin to realize its vision of a world where any woman can access preventive health services and gain the wisdom to improve her health.

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Address reprint requests to:

Julie C. Will, Ph.D.

*Division of Nutrition and Physical Activity
National Center for Chronic Disease Prevention
and Health Promotion*

*Centers for Disease Control and Prevention
4770 Buford Highway, N.E.*

MS K-26

Atlanta, GA 30341

E-mail: JWill@cdc.gov