



Community Health Worker National Workforce Study

An Annotated Bibliography

March 2007

**U.S. Department of Health and Human Services
Health Resources and Services Administration
Bureau of Health Professions**



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INTRODUCTION

In the past decade, changes in health care delivery and financing have been implemented or proposed by private insurers, business enterprises, and the Federal Government. These payers have been reacting to unprecedented increases in health-related expenditures and to hypercompetitive global markets. Simply, providing adequate health care to employees and the population at large is becoming very expensive. Factors contributing to the cost challenges have been population changes, provider shortages, accelerating technological progress, and the increasing complexity of the health care system.

“The Big Wave,” as some demographers call the baby boomer generation, has arrived on the shores of the 21st century and its impact is large. The pressure of these men and women on public and private services has shifted from educational facilities in the 1950s and 1960s to jobs, taxes, housing and economic security in the 1970s, 1980s and 1990s, to receiving sufficient preventive, acute and long-term care when and where needed. Additionally, in the United States, the changes in the size and structure of the population have been accompanied by unique changes in its diversity, adding special requirements, such as cultural competence, to the type and the quality of care necessary to improve health outcomes.

As the need for medical care is increasing, some health care providers are in short supply and/or unevenly distributed across the Nation. Solutions by science and technology for better communication, early diagnoses, less invasive procedures, shorter hospitalization, and outreach capabilities through telemedicine have been used to help solve the shortages. Technologies of information and telemedicine have been empowering individuals with less extensive clinical training but strong personal and community skills to become important members of established medical teams for improving access, patient communication and compliance, outreach, prevention and early diagnoses in entire communities and for underserved populations.

These developments set the stage for the emergence of the community health worker (CHW) workforce. Community health workers are lay members of communities¹ who work either for pay or as volunteers in association with the local health care system in both urban and rural environments and usually share ethnicity, language, socioeconomic status and life experiences with the community members they serve. They have been identified by many titles such as community health advisors, lay health advocates, *promotores(as)*,² outreach educators, community health representatives, peer health promoters, and peer health educators. CHWs offer interpretation and translation services, provide culturally appropriate health education and information, assist people in receiving the care they need, give informal counseling and guidance on health behaviors, advocate for individual and community health needs, and provide some direct services such as first aid and blood pressure screening.

¹ The term “community” is used in a geographic sense describing people living together in a particular area as small as, but not necessarily limited to, a neighborhood, that have some common characteristics and are unified by common interests.

² The terms *promotores* and *promotoras* are used in Mexico, Latin America, and Latino communities in the United States to describe advocates of the welfare of their own community that have the vocation, time, dedication, and experience to assist fellow community members in improving their health status.

Community health workers (CHWs) as a phenomenon of fellowship, self-reliance, self-preservation and survival within social groups residing in a specific locality, having common characteristics and often sharing cultural and historical heritage, is as old and universal as the communities themselves. The recognition of CHWs as a distinct health workforce, valuable in increasing access to health services for the poor and the underserved and in the delivery of cost effective yet culturally sensitive care, is less than 50 years old.

A 2-year national study of this emerging workforce began in 2004. This bibliography is a companion volume to the national study report that will be published in early 2007. The contract for this bibliography and study, HSH230200432032C, was awarded to the Regional Center for Health Workforce Studies of The University of Texas Health Science Center at San Antonio by the U.S. Department of Health and Human Services, Health Resources and Services Administration (HRSA), Bureau of Health Professions (BHP). The Evaluation and Analysis Branch, Office of Workforce Analysis and Quality Assurance, BHP, HRSA, was responsible for overseeing the research project.

Domain

The bibliography covers articles and published and unpublished research reports to provide a better understanding of the CHW workforce and its contributions to the National health care delivery system.

Scope

Searches of the bibliographic databases MEDLINE, CINAHL, Social Work Abstracts, and Scopus were conducted in August-September 2005, covering the years 1990 to 2005. Because the scope of each database varies and uses different controlled vocabulary (except for Scopus, which does not have a controlled vocabulary), the search terms varied between databases. Additional items were identified from key bibliographic references in available articles and reports that may not have surfaced in the electronic subject search or that were not included in bibliographic databases.

Search Results

References for all databases were reviewed to ensure that they were within scope, in English, and located in the United States. Then, they were exported into a library listing using the software EndNote, where duplicates were removed. The final group of references was used for the selection process.

Selection

Documents were selected for inclusion in the bibliography if they conformed to a combination of the following: (1) were highly rated by subject-matter experts as significant contributions to improving knowledge about the CHW workforce, (2) were highly quoted or seminal items in current CHW literature and research, (3) were peer reviewed, (4) were based on rigorous methodology and study design, and (5) addressed unique populations. This annotated bibliography includes the 45 items that met the inclusion criteria.

Organization

The reviewed articles are organized alphabetically, by author. An index by title begins on page 34 and by special topic on page 37.

Citation Format

Citation format follows the *National Library of Medicine Recommended Formats for Bibliographic Citation*, produced by the U.S. Department of Health and Human Services, National Institutes of Health, National Library of Medicine.

Bibliography Summary

Of the 45 articles included in this bibliography, 10 are review articles, overviews, surveys or white papers on multiple programs and 35 are individual program descriptions, research or evaluation studies.

The overviews and surveys of multiple programs describe definitions, roles, demographics, education, and training of CHWs, as well as program evaluation. Other topics include cost, funding and policy implications. Many reports summarize lessons learned from existing programs and made recommendations for the future. Overview reports are either statewide or nationwide. These literature reviews vary in methodology but generally explore study design and program outcomes of CHW programs in the United States. Past published reports cite CHW contributions to HIV prevention, immunizations, and cancer screening. These studies are described as having appropriate design and significant positive outcomes. General recommendations are made for stronger study design, larger sample sizes, longer study periods and triangulated approaches to research and evaluation of CHW programs and projects.

The articles on specific CHW programs and research cover the goals of the programs, the design of the studies, the populations served and locations of the studies, health topics addressed, and the outcomes of the project or program. Some reports address costs of the CHW approach in comparison to traditional approaches to health care delivery.

Goals of programs and projects: The goals are generally to improve access and reduce the cost of health care, often by providing preventive screening and education at the community level.

Study design: Many of the articles report on randomized controlled trials, the strong form of study design recommended in the overviews described earlier. Some reports include trials that could not be randomized because of the nature of the intervention, but the strength of this study design should nevertheless be acceptable. There are a few retrospective analyses and time series studies.

Populations and locations: Most programs were directed at the underserved. Most studies were conducted in locations characterized by poverty and lower educational levels, such as the inner city, the U.S.-Mexico border, and rural areas. Populations addressed include Hispanics, African-Americans, Asian Americans, Native Americans, the elderly, pregnant teenagers, and migrant workers. Study size varies. Some reports include relatively small

sample size considering the number of variables to be examined, while sample size in other studies is more than adequate.

Health topics: The studies generally focus on health concerns relevant to the populations described. These include chronic illnesses (such as diabetes, hypertension, and heart disease), maternal and child care (including prenatal care and childhood immunizations), cancer and cholesterol screening, and appropriate use of health services, such as emergency rooms.

Outcomes: Project and programs are complex and unique. The randomized controlled trials of health interventions are affected by the nature of social science research characterized by many variables that are difficult to isolate but each possibly making a contribution to the outcomes.

The individual summaries include, whenever appropriate, name and objective of the program, population assisted, location, study design, outcomes/limitations, and community health worker recruitment and type of interventions.

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SUMMARIES BY AUTHOR

Andersen MR, Yasui Y, Meischke H et al. The effectiveness of mammography promotion by volunteers in rural communities. Am J Prev Med 2000; 18 (3):199-207.

Program: Community Trial of Mammography Promotion

Objective: To assess the effectiveness of mammography promotion by community volunteer groups in rural areas.

Population and Location: Women between the ages of 50 and 80 in rural communities in Washington State.

Study Design: Randomized controlled trial (sample size = 6592) with control group and three interventions (individual counseling, community activities, and both).

Community Health Worker Recruitment: Volunteers were recruited from the participating communities.

Community Health Worker Interventions: Volunteers were trained in promotion through community activities (bingo nights, video showings, beauty shop promotions, display boards, mailings), individual counseling (mailings and telephone counseling), or both.

Outcomes/Limitations: All three interventions increased the use of mammography, with community activities the most successful. Effectiveness appeared greater in communities without a female physician. Limitations include the quality of counseling provided by different volunteers and the possibility of asking too much of volunteers.

Barnes K, Friedman S, Namerow P et al. Impact of community volunteers on immunization rates of children younger than 2 years. Arch Pediatr Adolesc Med 1999; 153 (5):518-24.

Program: Not identified

Objective: To assess the effectiveness of a volunteer-driven outreach program on immunization rates in children under 2 years old.

Population and Location: Caregivers of children under 2 in a largely Hispanic (Dominican) community in New York City.

Study Design: Randomized controlled trial (sample size = 434).

Community Health Worker Recruitment: Program was initiated by an unnamed volunteer group that was part of an international charitable organization.

Community Health Worker Interventions: Volunteers were organized by a coordinator from the local branch of the organization. The coordinator worked with the research study director and

kept records. Volunteers provided study participants with basic immunization education and referral, as well as follow-up contact and immunization assistance.

Outcomes/Limitations: The intervention group had significantly better immunization completion rates than the control group. The control group was 2.8 times more likely to be late for one or more vaccines. Limitations included that participants were enrolled based on clinic records, thereby missing unimmunized children who had never visited a clinic.

Bird J, McPhee S, Ha N et al. Opening pathways to cancer screening for Vietnamese-American women: lay health workers hold a key. *Prev Med* 1998; 27:821-9.

Program: Not identified

Objective: To assess the effectiveness of a community outreach intervention program to promote recognition, receipt, and screening-interval maintenance of clinical breast examinations (CBE), mammograms, and Pap smears among Vietnamese-American women.

Population and Location: Vietnamese women in California (intervention group in San Francisco, control group in Sacramento).

Study Design: Controlled trial (not randomized – intervention and control groups in separate cities).

Community Health Worker Recruitment: Neighborhood Leaders and Neighborhood Assistants were recruited from Vietnamese women who currently or previously resided in the area or who had family or friends residing there.

Community Health Worker Interventions: Neighborhood-based education programs were presented by Leaders and Assistants to small groups. A typical session included a Leader, an Assistant, a research staff person, a hostess, and four or more invited participants. Leaders received \$65/session, Assistants \$50, and hostesses were given \$50 to be shared equally with participants. Culturally appropriate Vietnamese-language educational materials were distributed at the educational sessions as well as at health fairs, local physicians' offices, neighborhood stores, etc. Health fairs staffed by Vietnamese physicians, community volunteers, and project staff were also conducted. A contest was also held with drawing for prizes among women who were up-to-date on their screening, or who kept screening appointments.

Outcomes/Limitations: At the end of the intervention, more Vietnamese women had heard of mammograms, CBEs, and Pap tests, had received the test(s), and had maintained screening behavior. Limitations include self-reporting of results and questions about the durability of the screening behavior.

Brown SA, Garcia AA, Kouzekanani K et al. Culturally competent diabetes self-management education for Mexican Americans: the Starr County border health initiative. Diabetes Care 2002; 25 (2):259-68.

Program: Starr County Border Health Initiative

Objective: To assess the effectiveness of culturally competent diabetes self-management education interventions in South Texas Mexican Americans with type 2 diabetes.

Population and Location: Mexican Americans aged 35 to 70 diagnosed with type 2 diabetes after the age of 35 in Starr County, Texas. Study participants were accompanied by a family member or close friend.

Study Design: Randomized controlled trial (sample size = 256). Control group was “wait-listed” and received treatment after the study group.

Community Health Worker Recruitment: Not described

Community Health Worker Interventions: Logistical support only. Originally, nurses and dietitians were to provide the educational component with community lay workers trained to direct support groups. However, subjects expressed a preference to have health professionals available throughout the intervention, so community workers’ roles were modified to one of logistical support: making reminder phone calls, providing transportation for subjects, preparing food for demonstrations, and keeping attendance logs.

Outcomes/Limitations: Statically significant changes were achieved in diabetes knowledge and in levels of HbA_{1c} and fasting blood glucose (FBG). Limitations include the cost of testing monitors and strips (for the organization), cost of recommended foods (for participants), and safety concerns for participants during exercise. Volunteers were used minimally in this program.

Burhansstipanov L, Dignan M, Wound D et al. Native American recruitment into breast cancer screening: the NAWWA Project. J Cancer Educ 2000; 15 (1):28-32.

Program: Native American Women’s Wellness through Awareness (NAWWA)

Objective: To increase screening for breast cancer among Native American women through outreach to increase participation in mammography, through a breast cancer education program that would be culturally acceptable.

Population and Location: Urban Native American women in Denver.

Study Design: Interrupted-time-series (comparing mammograms among Native American women in Denver before and during the program).

Community Health Worker Recruitment: Local Native American women were recruited and trained to provide outreach and education. Volunteers were known as “Native Sisters.”

Community Health Worker Interventions: Contacting women to increase awareness of the need for breast cancer screening; participating in community meetings to speak about the project; mailing the NAWWA project newsletter and educational materials to women; providing support by arranging transportation and accompanying participants to appointments and follow-up procedures; leading traditional social support circles to discuss breast cancer prevention and early detection.

Outcomes/Limitations: More Native American women were recruited and had mammographies after the Native Sisters program was initiated.

Campbell MK, James A, Hudson MA et al. Improving multiple behaviors for colorectal cancer prevention among African American church members. Health Psychol 2004; 23 (5):492-502.

Program: Wellness for African Americans Through Churches (WATCH)

Objective: To compare the effectiveness of two different strategies to promote colorectal cancer preventive behavior.

Population and Location: African-American members of 12 rural churches in North Carolina.

Study Design: Randomized trial (sample size = 587) comparing a targeted video/newsletter campaign versus a lay health advisor intervention versus a program combining the two. Control churches were offered health education sessions not directly related to the study objectives.

Community Health Worker Recruitment: Volunteer lay health advisors (LHAs) were recruited from involved churches based on nominations by church members.

Community Health Worker Interventions: The LHA interventions included providing information to church member through existing networks and organizing/conducting at least three church-wide activities to spread information and enhance support for desired behaviors.

Outcomes/Limitations: The hypothesis was that tailored messages and feedback would promote behavioral changes, with an additional hypothesis that the intervention would be enhanced with social support through existing networks. This second hypothesis was not confirmed. LHA intervention did not prove more effective either alone or in conjunction with tailored information. Possible reasons included limited reach of LHAs and that recipients may not have identified the church-based health activities as coming from LHAs.

Chernoff RG, Ireys HT, DeVet KA et al. A randomized, controlled trial of a community-based support program for families of children with chronic illness: pediatric outcomes. Arch Pediatr Adolesc Med 2002; 156 (6):533-9.

Program: “Network Mothers”

Objective: To reduce risk for poor adjustment and mental health problems in chronically ill children.

Population and Location: Mothers and chronically ill children (7-11 years old with diabetes mellitus, sickle cell anemia, cystic fibrosis, or moderate to severe asthma) in Baltimore.

Study Design: Randomized controlled trial (sample = 136 mothers and children).

Community Health Worker Recruitment: Not described (see Ireys 2001).

Community Health Worker Interventions: Professional child life specialists visited and called children and parents. Mothers of older children (“Network Mothers”) were trained to support those with younger children and the same condition.

Outcomes/Limitations: Scores for intervention participants show a decrease in anxiety for all mothers, regardless of disease group.

Corkery E, Palmer C, Foley ME et al. Effect of a bicultural community health worker on completion of diabetes education in a Hispanic population. Diabetes Care 1997; 20 (3):254-7.

Program: Not identified

Objective: To determine the effect of a bicultural CHW on completion of a diabetes education program.

Population and Location: Hispanic diabetics 20 years old and older, visiting a diabetes management clinic in East Harlem, New York, New York.

Study Design: Convenience sample of 64 patients visiting clinic who agreed to take part in a diabetes education program, divided into two groups – one receiving a CHW intervention and one not receiving the intervention.

Community Health Worker Recruitment: “The CHW was a bicultural, bilingual Hispanic-American of Puerto Rican heritage who lived in the East Harlem community and who had previously volunteered in a diabetes clinic.”

Community Health Worker Interventions: The CHW attended clinic sessions with patients, serving as interpreter, reinforcing self-care instructions, reminding patients of appointments and rescheduling them when necessary.

Outcomes/Limitations: Eighty percent of patients assigned to the CHW Intervention completed the program, compared with only 47 percent of those without the CHW Intervention.

Earp J, Eng E, O'Malley M et al. Increasing use of mammography among older, rural African American women: results from a community trial. Am J Public Health 2002; 92 (4):646-54.

Program: North Carolina Breast Cancer Screening Program

Objective: To evaluate the effectiveness of a Lay Health Advisor (LHA) intervention to increase breast cancer screening.

Population and Location: Rural African-American women 50 years and older in North Carolina.

Study Design: Randomized controlled trial (sample = 390 intervention group; 411 comparison group).

Community Health Worker Recruitment: Recruited 149 LHAs from within intervention counties, from women to whom others turned for guidance and support.

Community Health Worker Interventions: After training by community outreach specialists, LHAs worked individually and together to promote awareness and use of breast cancer screening. LHAs spoke individually to approximately two women per month. Approximately two community activities were scheduled per month, including presentation to community groups and at community events.

Outcomes/Limitations: In the 2-year study period, mammography use increased by 17 percent among the intervention group and by 11 percent in the comparison group. The intervention was also more effective among lower-income women. However, the impact of the LHA activities could not be separated from the impact of the other supplemental activities, which were mostly aimed at health professionals.

Erwin D, Spatz T, Stotts R et al. Increasing mammography practice by African American women. Cancer Pract 1999; 7 (2):78-85.

Program: The Witness Project

Objective: To evaluate the use of trained cancer survivors to promote early breast cancer detection and increased breast self-examination and mammography.

Population and Location: Rural African-American women from the Mississippi River Delta region of Arkansas.

Study Design: An intervention group consisting of a convenience sample of 204 participants was taken from African-American churches in 2 counties. A control group of 206 African-American women was taken from churches and the Cooperative Extension Service of two similar counties.

Community Health Worker Recruitment: Not described

Community Health Worker Interventions: Seven local African-American women who had survived breast or cervical cancer spoke on their personal experiences, highlighting the importance of personal responsibility as well as early detection and treatment, in groups of two to five at local churches and community organization meetings.

Outcomes/Limitations: Significant increase in self-reported breast self-examination (BSE) and mammography among the intervention group. Control group tended to be younger and recruited through membership in the Cooperative Extension Service, rather than through churches. The control counties also had access to more mammography facilities. Authors note that recruitment of the control group was difficult because churches generally did not want surveying of members without the presentation of a program.

Fedder DO, Chang RJ, Curry S et al. The effectiveness of a community health worker outreach program on healthcare utilization of west Baltimore City Medicaid patients with diabetes, with or without hypertension. Ethn Dis 2003; 13 (1):22-7.

Program: Community Health Worker Outreach Program

Objective: To assess the effectiveness of CHW case managers on health care utilization in patients with diabetes and/or hypertension, particularly emergency room visits and hospitalization

Population and Location: One hundred and seventeen African-American patients in west Baltimore.

Study Design: Retrospective comparison. Two years into the CHW Outreach program, patients with five or more CHW contacts were selected. The Maryland Medicaid Claims databases provided data on their emergency room visits and hospitalization in the year prior to their enrollment in the program and in the year after enrollment.

Community Health Worker Recruitment: CHWs were recruited from target neighborhoods and required to have extensive previous community service experience and commitment to service. CHWs were provided with a bus pass and small monthly stipend (\$45-\$75, depending on caseload). Sixty-eight CHWs were trained and 38 were active at the time of this study.

Community Health Worker Interventions: CHWs received 60 hours of training in chronic illnesses, particularly diabetes and hypertension, resource identification, and case management. CHWs were initially assigned to 2 patients, working their way up to as many as 10 at a time. They contacted patients at least once a week, alternating between in-home visits and phone calls, linking patients with appropriate care, monitoring patients' self care, and providing social support to patients and their families.

Outcomes/Limitations: Emergency room visits decreased 38 percent and hospital admissions decreased by 53 percent. Mean Medicaid expenditures decreased 27 percent. Possible limitations included the fact that the patients were self-selected, responding to an offer of free

care, and, therefore, may have been more highly motivated. The 12 month evaluation period was also relatively short.

Gary TL, Bone LR, Hill MN et al. Randomized controlled trial of the effects of nurse case manager and community health worker interventions on risk factors for diabetes-related complications in urban African Americans. *Prev Med* 2003; 37 (1):23-32.

Program: Project Sugar 1

Objective: To evaluate the use of nurse case managers, CHWs, or nurse-CHW teams to improved diabetic control in African-Americans.

Population and Location: African-American adults with type 2 diabetes in East Baltimore, Maryland.

Study Design: Randomized controlled trial (sample size = 186) divided into four cohorts: Usual care (control); Usual care + Nurse Case Manager (NCM); Usual care + Community Health Worker (CHW); Usual care + Nurse Case Manager/CHW team.

Community Health Worker Recruitment: Not described. The CHW was a local part-time college student with no formal training in health care before the study.

Community Health Worker Interventions: The CHW met with participants at home or by telephone and facilitate care by offering to schedule appointments, providing education, reinforcing behavior, mobilizing social support, and providing physician feedback.

Outcomes/Limitations: The NCM/CHW Intervention produced greater effects than the NCM or CHW Interventions alone, while the NCM and CHW group effects were similar to each other. Limitations stated were small group size; bias among those choosing to take part; problems with follow-up visits; lack of resources to track changes in medication and complications.

Health Resources and Services Administration. Impact of community health workers on access, use of services, and patient knowledge and behavior. U.S. Department of Health and Human Services, Health Resources and Services Administration, Bureau of Primary Health Care, 1998.

Objective: To inform the Bureau of Primary Health Care (BPHC) on ways its programs use CHWs, who they are, what they can contribute and how they are managed; to determine outcomes of using CHWs on patient access to services and on patient knowledge and behavior; to provide background for further studies on CHWs.

Location: Seven sites using CHWs in California, Texas, Michigan, Maine, New York and Alabama.

Study Design: BPHC provided a list of 60 funded programs that used CHWs to the study group. The list was narrowed to 30 representative programs based on geographic location; urban rural or border; population served and number of users served. Telephone interviews identified whether records were sufficient for review and if centers could link CHW activities

to health center activities. Fourteen centers were profiled and seven sites were selected for site visits. During 2- to 3-day visits, the study team met with executive directors, financial officers, CHW program administrators and supervisors, and representatives of local social service agencies who interacted with the programs, and clients.

Outcomes: The study group found each program was tailored to meet the unique needs of the community it serves but there were some generalizations.

- CHW activities may be integrated into primary care operations or kept separate.
- Most CHWs are members of the community they serve.
- Female CHWs predominate.
- The age range varies greatly. In some cases, age is relevant to program effectiveness.
- Educational levels vary.
- CHWs are recruited through traditional means and word of mouth.
- CHWs work at or near full time, and several programs have low turnover.
- CHWs complete comprehensive training programs.
- CHWs help patients to properly use the health care system and provide translation. They helped ensure that immunization, prenatal care, and screening schedules were met.
- CHWs provided health education sessions.
- Some programs had problems with supervisor expectations of CHWs, especially when supervisors were not involved in program planning and recruitment.
- The cost of programs varied greatly.
- Programs generally maintain adequate data on activities, but information systems may be inadequate to measure the impact of interventions.

The seven study sites were reported to have learned the following lessons:

- CHW time should be balanced between the community and the health center.
- CHW programs require community participation in needs assessment and planning.
- CHW programs should be fully integrated into health center clinical services.
- CHWs can be used to extend existing successful projects.
- Program administrators should implement policies and regulations that maximize the effectiveness and minimize risk to CHWs, as they can work with unsafe areas and with at-risk populations.
- CHWs are most effective when they are members of the community; however, sometimes non-local CHWs can add fresh perspectives to programs and communities.
- CHWs with few job skills can still be valuable, as they are given the opportunity to learn professional skills, give back to the community, and serve as role models.
- CHWs do not have to be of the same demographics to serve the homeless, although homeless clients respond well to CHWs who have faced similar challenges as homelessness and substance abuse.
- Group training develops teamwork.
- CHWs need more individual assignments rather than general orientations.
- CHWs must constantly maintain and upgrade skills.
- Clear communication and involvement of future supervisors in planning is needed.

- Creative financing is needed to keep successful programs going.
- Policymakers should recognize the need for funding streams.
- CHW encounter records should be included in patient records.
- Better and more outcomes measures of CHW programs are needed.

Recommendations:

BPHC and others with an interest in CHWs should conduct studies on the following:

- Program focus: Are community or clinically focused programs more effective in meeting community needs?
- Job Functions: What are the more specific functions CHWs perform in various categories, for example, in health education?
- Populations: What are the target populations served?
- Training: At all sites, CHWs undergo comprehensive programs.
- Supervision: What are challenges faced? How can supervisors be involved early in program planning and CHW selection? Because many CHWs have not worked in professional atmosphere, what are the challenges?
- Funding of Programs: Study sites were diligent in finding funding, but this was a challenge.
- Recordkeeping and Data Collection: Information is further needed to conduct program evaluation.
- Program Impact: The programs studied generally had a positive impact on patient access to services, proper use of services and on health knowledge and behavior.
- Limitations: Improved data collection systems are needed for better measurement of impact. Common patient identifiers are needed. Patient encounter information across programs needs to be entered into a common database, rather than on separate, paper-based systems.

Health Resources and Services Administration. A literature review and discussion of research studies and evaluations of the roles and responsibilities of community health workers (CHWs). U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau, 2002.

Objective: To synthesize and discuss research on CHWs; to provide a framework for the design and implementation of a National evaluation of the value of CHW services.

Population and Location: Nationwide

Study Design: The study includes a background with definitions, benefits of CHWs (access to care, quality of care, cost of care and community partnerships) and barriers to expanded use of CHWs (lack of standard definition, clear concept, education and training, public visibility, secure funding, and relatively short life of programs). There are reviews of eight programs with process evaluations and six with outcome evaluations. The section on the contribution of the literature to designing a National evaluation includes roles of CHWs, employment of CHWs by Medicare-Medicaid managed care; data and performance measures, and elements of

a successful evaluation. The report includes potential funders of CHWs, as well as a summary and bibliography of 72 references.

Outcomes/Limitations: The study group identified the following as elements of a successful evaluation and important in conducting a National CHW evaluation: clear and measurable goals and objectives; adequate evaluation support, training and involvement of program staff; development of outcome measures; sufficient study time to show results; and avoidance of contamination of the control group by contact with the test group. The study group suggests quasi-experimental evaluation design might be preferable to randomized controlled trials, because random assignment to a group is generally not possible in CHW studies.

Hill MN, Han H-R, Dennison CR et al. Hypertension care and control in underserved urban African American men: behavioral and physiologic outcomes at 36 months. Am J Hypertens 2003; 16 (11):906-13.

Program: Not identified

Objective: To evaluate the effectiveness of two interventions (an intensive one by a nurse practitioner-community health worker-physician (NP/CHW/MD) team and the other less intensive focusing on education and referral) in controlling blood pressure and minimizing progression of left ventricular hypertrophy and renal insufficiency in younger African-American men.

Population and Location: Hypertensive African-American men (ages 21 to 54) in inner-city Baltimore, Maryland.

Study Design: Randomized controlled trial (157 in more intensive program, 152 in less intensive program) over 36 months.

Community Health Worker Recruitment: Not described

Community Health Worker Interventions: The CHW made one or more home visits each year to assist the participants support person, as well as making referrals to social services and assist with housing.

Outcomes/Limitations: More intensive intervention with CHWs showed greater reduction in blood pressure and higher rates of blood pressure control as well as a greater slowing of progression of left ventricular hypertrophy.

Humphry J, Jameson L, Beckham S. Overcoming social and cultural barriers to care for patients with diabetes. West J Med 1997; 167 (3):138-44.

Program: Diabetes Prevention Project

Objective: To test whether a community-based program, using a paraprofessional as primary contact, would improve patient compliance in diabetes.

Population and Location: Multiethnic diabetic community in Waianae, Hawaii, with a history of missed appointments, or diabetes in pregnancy, or children requiring insulin.

Study Design: Four-year project; 94 patients in a demonstration project (no control group).

Community Health Worker Recruitment: Not described. CHWs were medical assistants/paraprofessionals who received 20 weeks of training and monthly continuing education (CE).

Community Health Worker Interventions: Acted as patients' primary contact and first line health care worker. Helped patients with self-management. Provided nutrition and diabetic education.

Outcomes/Limitations: Patients: Fifty-two non-pregnant adults, on average, lost 5.4 pounds (ranging from losing 25 or more pounds to gaining 10 or more pounds). Forty percent improved blood glucose control. Systolic blood pressure dropped by 20.5 mmHg on average. None of nineteen pregnant women achieved pre-gestational diabetes control. Limitations include using relatively untrained community health care workers as primary contact/first line caregivers which sometimes led to problems in providing care, especially in the early phases of the project.

Ireys HT, Chernoff R, DeVet KA et al. Maternal outcomes of a randomized controlled trial of a community-based support program for families of children with chronic illnesses. Arch Pediatr Adolesc Med 2001; 155 (7):771-7.

Program: Family-to-Family Network

Objective: To decrease risk for anxiety and depression in mothers of children aged 7 to 11 with chronic diseases (cystic fibrosis, diabetes, sickle cell anemia, moderate-to-sever asthma) by matching them with mothers of older children with the same chronic disease.

Population and Location: One hundred sixty-one mothers (86 in the experimental group, 75 in the control group), chosen from patients at 16 clinics in Baltimore, Maryland.

Study Design: Randomized controlled trial; outcome measured with several questionnaires.

Community Health Worker Recruitment: "Network Mothers" (mothers of children, 18 or older, with the same chronic diseases) nominated by directors and staff at specialty clinics, who then

underwent a 30-hour training program. Network Mothers (NMs) were paid at an hourly rate. Eighteen NMs eventually worked for the program.

Community Health Worker Interventions: NMs provided support by linking families with resources and information; by enhancing the mother's confidence in parenting; and by providing emotional support. Control group mothers were offered the opportunity to contact experienced but untrained mothers of older patients.

Outcomes/Limitations: Scores for intervention participants show a decrease in anxiety for all mothers, regardless of disease group.

Kegler MC, Malcoe LH. Results from a lay health advisor intervention to prevent lead poisoning among rural Native American children. Am J Public Health 2004; 94 (10):1730-5.

Program: Tribal Efforts Against Lead (TEAL)

Objective: To test the effectiveness of a community-based CHW intervention for prevention of lead poisoning among Native American children who lived in a former lead and zinc mining area.

Population and Location: Children of eight tribes and nations in northeastern Oklahoma.

Study Design: Randomized controlled trial comparing 331 Native American (intervention group) children and 387 White (control group) children after a 2-year intervention. Pre- and post-intervention blood lead levels of the Native American children were also compared.

Community Health Worker Recruitment: Natural helpers (CHWs) were recruited from the community and received 8 hours of training. It is unclear if CHWs were paid.

Community Health Worker Interventions: CHWs educated individuals in their social networks on sources of lead exposure and lead poisoning prevention strategies, including the importance of blood lead screening, strategies for removing lead sources, hand washing, playing in grass rather than in dirt or mine tailings, good nutrition, and housecleaning. For over 2 years they made 27,000 contacts and spent more than 5,000 hours conducting education efforts (average 5.4 education/outreach activities per month).

Outcomes/Limitations: Significant declines in blood lead levels in the intervention group were observed. Improvements were also shown levels of knowledge. One limitation was that the intervention and control groups lived in the same communities. This was necessary in order for them to have the same environmental risks, but may have caused "contamination" of the control group with the preventive messages meant for the intervention group.

Krieger J, Collier C, Song L et al. Linking community-based blood pressure measurement to clinical care: a randomized controlled trial of outreach and tracking by community health workers. Am J Public Health 1999; 89 (6):856-61.

Program: Seattle Hypertension Intervention Project

Objective: To assess the effectiveness of a tracking and outreach intervention by CHWs in increasing medical follow-up of persons with hypertension that was detected during community blood pressure (BP) screenings.

Population and Location: Four hundred twenty-one Black or White adults with blood pressure greater than or equal to 140/90 and income equal or less than 200 percent of Federal poverty level, located in low-income neighborhoods in Seattle, Washington.

Study Design: Randomized controlled trial (sample size = 421; 209 intervention group, 212 control group).

Community Health Worker Recruitment: CHWs were from low-income neighborhoods similar to the project community. CHWs received 100 hours of training and were certified as blood pressure measurement specialists. No information was provided on how they were recruited or compensated.

Community Health Worker Interventions: CHWs provided BP screening and provided follow-up services including referral to medical, help making an appointment, an appointment reminder letter, appointment follow-up and a new appointment if one was missed (up to three), and assistance in reducing barriers such as referral to transportation, childcare, and other services.

Outcomes/Limitations: 65.1 percent of intervention group participants completed a medical appointment within 90 days of referral, while only 46.7 percent of the control group did so. Fewer than 10 percent of the intervention group participants who completed an appointment required more than one appointment to do so.

Krieger JW, Castorina JS, Walls ML et al. Increasing influenza and pneumococcal immunization rates: a randomized controlled study of a senior center-based intervention. Am J Prev Med 2000; 18 (2):123-31.

Program: Seattle Senior Immunization Project

Objective: To increase the rate of pneumococcal and flu immunizations among an urban senior population.

Population and Location: Adults 65 and older recruited from a senior center and the five ZIP codes comprising the senior center's service area.

Study Design: Randomized controlled trial (sample size = 1246; 622 intervention group, 624 control group).

Community Health Worker Recruitment: CHWs were volunteers recruited from the senior center membership. CHWs received 4 hours of training, including role-playing.

Community Health Worker Interventions: Intervention group members were mailed an education brochure and a postage-paid reply card for tracking immunization status. CHWs followed up with unimmunized participants and with those who did not reply. CHWs encouraged immunization and followed up, up to five times. Control group members received the usual senior center and community immunization activities (including availability of vaccine at the senior center).

Outcomes/Limitations: Intervention group had a flu immunization rate of 88.2 percent (compared to 78.3 percent the previous year) and a pneumococcal immunization rate of 66.5 percent (41.7 percent the year before). The control group had a flu immunization decrease, from 83 percent to 81.7 percent, and a pneumococcal immunization increase from 40.5 percent to 50.9 percent. The program was also successful in increasing flu immunizations among those who had not received an immunization the previous year. Limitations included the possibility of self-selection among those more motivated to receive immunizations, and that it relied on self-report. Control group members may also have been influenced by intervention group members.

Krieger JW, Takaro TK, Song L et al. The Seattle-King County Healthy Homes Project: a randomized, controlled trial of a community health worker intervention to decrease exposure to indoor asthma triggers. Am J Public Health 2005; 95 (4):652-9.

Program: Seattle-King County Healthy Homes

Objective: To assess the effectiveness of a CHW intervention designed to reduce exposure to indoor asthma triggers.

Population and Location: Two hundred seventy-four low-income households in King County, Washington, with an asthmatic child 4 to 12 years of age.

Study Design: Randomized controlled trial with 138 high-intensity intervention group families, 136 low-intensity intervention/control group families.

Community Health Worker Recruitment: Not described

Community Health Worker Interventions (described in another paper): CHWs conducted a home environmental assessment, and with the participant, prepared an action plan. CHWs made up to eight more visits to encourage completion of action plan, provide support, deliver resources, including pillow and mattress covers, vacuums, cleaning kits, roach bait, etc. Control group families received a single CHW visit, an action plan, limited education, and bedding encasements. Community members were also trained as interviewers to collect baseline and exit data.

Outcomes/Limitations: Outcomes were measured with the Pediatric Asthma Caregiver Quality of Life Scale (QoL), participant and caregiver reports and interviewer observation. Caregivers in the intervention showed significantly great QoL benefit. Urgent health service use declined significantly, and symptom days decreased. Except for reduction of dust exposure and use of bedding encasements, few behaviors changed significantly.

Lam TK, McPhee SJ, Mock J et al. Encouraging Vietnamese-American women to obtain Pap tests through lay health worker outreach and media education. J Gen Intern Med 2003; 18 (7):516-24.

Program: REACHing Vietnamese-American Women: A Community Model for Promoting Cervical Cancer Screening

Objective: To increase Vietnamese-American women's cervical cancer awareness, knowledge, and screening, using lay health worker outreach and a media education campaign.

Population and Location: Vietnamese-American women in Santa Clara Country, California.

Study Design: Four hundred women randomized into an intervention group, receiving CHW activities as well as media-based education, and a control group, which received only media-based education.

Community Health Worker Recruitment: Twenty CHWs were selected from agencies working with Vietnamese-American women. CHWs were trained in two 3-hour sessions about female reproductive anatomy, cervical cancer, risk factors, and early detection as well as recruiting, partisanship, program leadership, and presentation skills. Each CHW received a stipend of \$1500.

Community Health Worker Interventions: CHWs each recruited 20 women to take part in the program. These women were randomized into intervention and control groups. CHWs organized women into groups for presentations with discussions and questions. They explained how to access medical services and helped some women to schedule Pap tests. Pre- and post-intervention questionnaires were administered. Originally, CHWs were to be involved in data collection; however, the university review board would not allow this without National Institutes of Health (NIH) human subjects certification.

Outcomes/Limitations: Cervical cancer knowledge and receipt/intent of a Pap test increased in both groups, but significantly more in the intervention group. Limitations include the fact that participants were self-selected. There was also a lack of understanding about scientific research method which may have affected the outcome.

Levine D, Bone L. Impact of a planned health education approach on the control of hypertension in a high-risk population. J Human Hypertension 1990; 4 (4):317-21.

Program: Not identified

Objective: To improve identification of individuals with hypertension, to enhance continuity of care, to decrease drop-out rates, and to improve adherence to prescribed treatment for control of hypertension.

Population and Location: Community of approximately 80,000 individuals in Maryland with the highest rate for uncontrolled hypertension and complications. This group was primarily Black, poor, and under-educated. The target group within this population was males, 18 to 49 years old that tend to be less aware of, or were not receiving treatment, for hypertension.

Study Design: Program report

Community Health Worker Recruitment: Recruited from those already involved in community service. CHWs received training to provide BP screening, education counseling, monitoring, follow-up, and outreach.

Community Health Worker Interventions: Provided BP screening, education counseling, monitoring, follow-up, and outreach. Special emphasis was given to target population in the hospital emergency room.

Outcomes/Limitations: A long-term project. There was no control group, but between 1978 and 1986, surveys showed that the percentage of individuals with hypertension who were aware of their condition increased from 65 percent to 80 percent. The percentage receiving treatment increased from 45 percent to 66 percent and those achieving BP control increased from 32 percent to 50 percent. However, this paper gives no indication as to direct links between the improvements and CHW activities.

Levine DM, Hill MN, Gelber AC et al. The effectiveness of a community/academic health center partnership in decreasing the level of blood pressure in an urban African-American population. *Ethn Dis* 2003; 13 (3):354-61.

Program: Sandtown-Winchester High Blood Pressure Control Program

Objective: To investigate the effectiveness of using CHWs in decreasing hypertension in an urban African-American population.

Population and Location: Sandtown-Winchester, the inner city of Baltimore. Study population was 100 percent African-American, 62 percent female, average age of 54; 42 percent had the equivalent of a high school education; 45 percent had less than a ninth grade education; 32 percent were unemployed; 65 percent had an annual income less than \$10,000; and 20 percent had no health insurance.

Study Design: Randomized clinical trial over a 30-month period. Interviewers identified 2,736 adults eligible for the study, with 2,196 completing the first interview; 817 with hypertension were invited to participate. Most (97 percent) agreed. Participants were randomly assigned to one of two groups. One group had more intensive intervention with CHWs and one had less.

Community Health Worker Recruitment: A community health advisory board helped recruit, select, and monitor CHWs whose training took place over a 3-month period. Training, which took place over a period of 3 months is described in another article by Strogatz and James (1986).

Community Health Worker Interventions: CHWs were trained and certified to monitor, educate, counsel, and follow-up with blood pressure management. Participants with less intensive intervention were visited by CHWs and given counseling, cards to record levels of blood pressure, educational pamphlets, and information on access to health care. Those with more intensive intervention received five home visits over 30 months. In-depth education included food preparation, family member support, health insurance, and more.

Outcomes/Limitations: Both systolic and diastolic blood pressure decreased in those studied during 13 months of the study, resulting in a statistically significant increase in the percent with controlled hypertension. More intensive intervention, with home visits, did not result in better outcomes. One-third of participants available at baseline were unavailable for follow-up at forty months.

Lewin SA, Dick J, Pond P et al. Lay health workers in primary and community health care (review). Cochrane Database Syst Rev 2005; (1): Art. No.: CD004015. DOI: 10.1002/14651858.CD004015.pub2.

Program: Cochrane Collaboration

Objective: To review articles and summarize the effects of lay health worker (LHW) interventions on patient health outcomes and satisfaction with care.

Study Design: Major databases such as MEDLINE, EMBASE, Science Citation Index, CINAHL, and more were searched for randomized controlled trial reports of interventions delivered by LHWs. Reports were reviewed by two independent reviewers who extracted data and rated study quality. Similar studies were grouped together and results were combined, when possible.

Outcomes/Limitations: The reviewers found 43 reports for inclusion. These studies had impact on 210,110 individuals. Most studies were too diverse to combine or draw conclusions from; however, the authors found the use of LHW interventions were positive in promoting immunization, improving outcomes for certain infectious diseases, and promoting breastfeeding. The authors found a small positive effect in promoting breast cancer screening. The authors conclude more rigorous research is needed to determine the effectiveness of LHWs on health outcomes.

Love MB, Gardner K. The emerging role of the community health worker in California: results of a Statewide survey and San Francisco Bay area focus groups on the community health workers in California's public health system. Center for Health Promotion, CHW Certificate Training, and California Department of Health Services, 1992.

Program: Statewide Survey and Focus Groups on Community Health Workers

Objective: To explore the extent of use of CHWs in California, determine an ethnic profile, and identify job responsibilities and training needs for these individuals.

Population and Location: California health departments, community centers and hospitals in Northern and Central California.

Study Design: Surveys were mailed to 310 Statewide health departments, community health centers, as well as hospitals limited to Northern and Central California. The survey covered workers who both worked in clinics and in the communities. Focus groups were held in Bay Area Hospitals.

Outcomes/Limitations: There was a 60 percent overall response rate. More than half of the facilities employed CHWs. About half of the CHWs had the following characteristics: earned \$20,000-\$30,000 annually; were people of color; and had a high school degree or less. CHWs took health histories and vital signs, provided advice, information, referrals, translation, and advocated for the community. Areas of work included sexually transmitted diseases, maternal and child health, family planning, and work with youth. Most facilities provided training for CHWs; about half said they would send CHWs for certificate training. Training, if offered, should include communication, interviewing, medical terminology, screening, counseling, advocacy, and referral skills. Training should also include how to manage a stressful and sometimes dangerous job. Most became CHWs because they were already known for working as community volunteers and had been clients of the programs that later hired them.

Margolis K, Lurie N, McGovern P et al. Increasing breast and cervical cancer screening in low income women. J Gen Intern Med 1998; 13 (8):515-21.

Program: Women's Cancer Screening Clinic and Berman Center for Outcomes and Clinical Research

Objective: To test a hypothesis that women in non-primary care clinics would have higher breast and Pap smear screening rates if lay health advisers recommended screening and offered convenient screening with a female health practitioner.

Population and Location: Women, aged 40 or over, attending non-primary care outpatient clinics (surgery, orthopedics, ophthalmology, dental, and psychiatry) at Hennepin County Medical Center, the urban country teaching hospital in Minneapolis

Study Design: Controlled trial.

Community Health Worker Recruitment: Volunteer senior aides – low income elderly lay women with salaries paid by a Federal job training program and trained to participate in the study.

Community Health Worker Interventions: Lay health advisers (LHAs) assessed breast and Pap smear screening status by classifying participants as “due” or “up-to-date.” Those due for the screenings were told so by an LHA and offered the opportunity for the screening at the Women's Cancer Screening Clinic with a female nurse practitioner.

Outcomes/Limitations: Outcome measures were the completion of mammograms or Pap smears between the time of the questionnaire and follow-up 1 year later. Intervention was related with a higher rate of screening completions. Breast and cervical cancer screening rates improved, especially among older women of color, who are most in need of the services.

Study was not randomized. Results are based on a combination of database analysis and participant self-reports of screening.

Massachusetts Department of Public Health. Community health workers: essential to improving health in Massachusetts. Findings from the Massachusetts Community Health Worker Survey. Division of Primary Care and Health Access, Bureau of Family and Community Health, 2005.

Program: Massachusetts Community Health Worker Survey

Objective: To identify characteristics of CHWs, what they do, their defining issues as a workforce, and to help better understand and support community health works and improve health outcomes.

Population and Location: Eight thousand agencies and individuals in Massachusetts.

Study Design: Surveys were mailed to CHWs and supervisors. Surveys included 51 questions for workers and eight questions for supervisors.

Outcomes/Limitations: Surveys were returned by 46 percent of CHWs and 68 percent of supervisors. Seventy-six percent of CHWs were female. Supervisors are 87 percent female. Eighty percent responded they were White but 15 percent did not respond to the question. Those surveyed represented more than 20 ethnicities. Many spoke two or more languages. Wages were low and turnover was high among the workers. Most (78 percent) shared the same ethnicity as those they served. When CHWs were male, they targeted male populations 73 percent of the time. Those conducting the survey concluded that CHWs faced difficult working conditions, poor compensation, lack of benefits, inadequate training and supervision, and few opportunities for promotion. However, the unique skills and high commitment to their communities meant CHWs played an important role in addressing certain health care problems. The authors suggest the establishment of core competencies, a career ladder for this workforce, training and supervision for CHWs, fair and equitable pay, a collaboration with the Massachusetts Community Health Worker Network, further research on the unique contribution of the workforce, more education for health providers and policymakers, and identification of stable funding for long-term program planning. The lack of a standard definition for CHWs hindered the study. Because the profession was emerging, it was difficult to determine the number of workers in the State. The survey identified 800 such workers. There might have been selection bias in this self-reporting survey. Workers may not have replied due to time constraints, literacy level, etc. The survey was only presented in English, and the CHWs' first language may not be English.

May M, Kash B, Contreras R. Southwest Rural Health Research Center: community health worker (CHW) certification and training - a national survey of regionally and State-based programs. U.S. Department of Health and Human Services, Health Services and Resources Administration, Office of Rural Health Policy, May 2005.

Program: Southwest Rural Health Research Center, School of Rural Public Health, Texas A&M University System Health Science Center. Funded by: 5-U1C-RH00033, Office of Rural Health Policy, Health Services and Resources Administration, U.S. Department of Health and Human Services

Objective: To provide a National overview of State policy and involvement in training and certification of CHWs; to analyze potential effects of policy trends; to report on certificate and training programs, including history, structure of programs, goals of programs, curricula, evaluation of programs, impact, and future of programs.

Population and Location: Nationwide State public health officials, offices of rural health, primary health care associations, departments of social services, CHW networks and associations, community colleges with CHW training programs and training service providers.

Study Design: State legislative Web sites were used to find legislation or laws related to CHWs. In-depth interviews were then conducted with 17 States: Alaska, Arizona, California, Connecticut, Florida, Indiana, Kentucky, Massachusetts, Mississippi, North Carolina, New Mexico, Nevada, Ohio, Oregon, Texas, Virginia, and West Virginia.

Outcomes/Limitations: All 17 States have some kind of training or certification for CHWs. Alaska, Indiana and Texas had State certification programs. Arizona, California, Kentucky, Massachusetts, Nevada, New Mexico, and Ohio were considering State certification. Ohio, North Carolina and Nevada have State standards for training. There are three major trends:

1. Most States use community college or agency-based training with a standardized curriculum.
2. On-the-job training is offered.
3. Certificate at the State level raises the possibility for reimbursement for CHW activities.

Five policy implications for State standardized training and certification programs were offered:

1. Definitions, roles and purposes of CHWs must be considered as part of the training and certification process plan.
2. The social and health service needs of the communities where the CHWs work must be considered when creating curricula.
3. Evaluation research is needed on various aspects of training, program use, satisfaction, patient outcomes and cost-effectiveness.
4. Policies and strategies are needed to increase retention of CHWs; facilitate integration of CHWs into the health system and identify sources of long-term funding.
5. While systematically integrating CHWs into the health system, be cognizant of the strengths that make CHWs unique – community attachment, cultural and linguistic similarity to those they serve, local knowledge, and more.

Meister JS. Community outreach and community mobilization: options for health at the U.S.-Mexico border. J Border Health 1997; 2 (4):32-8.

This review article discusses the various roles of *promotoras* as well as community mobilization leaders (community members working on broader goals). Seven general themes are discussed: culture of the border, professional/community interface, indigenous leadership, the expanding definition of health, immigration/migration, transborder utilization, and economic development.

Meister JS, Warrick LH, de Zapien JG et al. Using lay health workers: case study of a community-based prenatal intervention. J Community Health 1992; 17 (1):37-51.

Program: *Un Comienzo Sano* (A Healthy Beginning)

Objective: To promote more adequate prenatal care, fewer pregnancy complications, earlier high risk intervention and better birth outcomes.

Population and Location: Low-income Hispanic women in three migrant communities in Yuma County, Arizona.

Study Design: Description of demonstration program.

Community Health Worker Recruitment: A bilingual nurse midwife was recruited as coordinator. A Mexican American woman who had worked with the county Women, Infants, and Children (WIC) nutritional program and was a former farmworker served as a consultant. Names of potential *promotoras* were gathered from community contacts. *Promotoras* needed to be bilingual, have children of their own and make a 1 year commitment. *Promotoras* were hired for 10 hours per week and paid equal to an entry level health aide. All completed 32 hours of training, including teaching skills.

Community Health Worker Interventions: Each *promotora* recruited up to 10 women for her class. Classes about prenatal care were held in Spanish. Classes were held in three target communities for 2 to 3 hours each week, for 12 weeks.

Outcomes/Limitations: The program grew to be both a prenatal education program and a family support system. More people than expected applied for the program, and people outside the target audience also attended. In order to accommodate excessive size, the program sacrificed support staff, educational materials and transportation reimbursements. It was felt more thorough needs assessments could have helped anticipate possible concerns. Lessons learned include: maintaining cultural relevance, conducting community assessment to overcome resistance; empowering community-based workers and collecting data for documentation and evaluation. Information on health outcomes was not available.

Morisky DE, Lees NB, Sharif BA et al. Reducing disparities in hypertension control: a community-based hypertension control project (CHIP) for an ethnically diverse population. Health Promot Pract 2002; 3 (2):264-75.

Program: Community Hypertension Intervention Program (CHIP), a 4-year program to identify effective strategies to help patients manage their high blood pressure.

Funded by National Health, Lung and Blood Institute, Award R0-H251119

Objective: To investigate the value of three interventions, including those with CHWs; to improve hypertension treatment adherence.

Population and Location: Low-income, inner-city Black and Hispanic adults (1,367) in a large west coast city. Participants were recruited from the county hospital clinic or a private health clinic in the community; 98 percent of those approached agreed to participate. At time of entry into the study only 35 percent of the participants had their blood pressure under control; 41 percent were male, average age was 54; most were Black (77 percent) and Hispanic (21 percent); 49 percent had not completed high school; 40 percent had a high school diploma; and more than half reported income of less than \$5,000 per year. Most (84 percent) had either no insurance or health coverage by a public assistance program.

Study Design: 6- and 12-month study results of the clinical trial of a 4-year longitudinal study. Participants randomized to one of three interventions. Participants were randomly assigned to either usual care or one of three interventions: individualized counseling with CHWs; a computerized appointment tracking system, with mailed reminder cards 10 days before appointments, or home visits and focus group discussions with CHWs.

Community Health Worker Recruitment: Not described. CHWs received 1 month training in interviewing, American Heart Association guidelines and certified for blood pressure monitoring. CHWs conducted interviews, counseling sessions and home visits.

Community Health Worker Interventions: Individualized session consisted of a 5 to 10 minute counseling with a CHW to reinforce healthy lifestyles, taking medications and keeping appointments followed by three home visits that included family members to reinforce adherence to the treatment plan and discuss risk factors such as weight loss and smoking cessation.

Outcomes/Limitations: The study reports 6 and 12 month results. After 6 months, the most significant improvements in blood pressure control and appointment keeping was with those participants in the patient tracking intervention. However, after a year, those who had individualized counseling and home visits with CHWs had significant, sustained improvements both in the control of their blood pressure and in keeping appointments.

Navaie-Waliser M, Martin SL, Tessaro I et al. Social support and psychological functioning among high-risk mothers: the impact of the Baby Love Maternal Outreach Worker Program. Public Health Nurs 2000; 17 (4):280-91.

Program: Baby Love Maternal Outreach Worker (MOW) Program

Objective: To evaluate a maternal home visit program to learn whether program participation was associated with improvements in mothers' psychological functioning and whether improvements in psychological functioning were associated with type and intensity of support.

Population and Location: Medicaid-eligible mothers and infants in 18 counties in North Carolina.

Study Design: Part of a comprehensive longitudinal evaluation of the program. Comparison of 221 mothers who participated in the program versus 198 from similar counties who did not. Comparisons were on proportion of births to African-American mothers, births to teen mothers, preterm births, low birth weight infants and births to mothers in rural areas. The sample of pregnant women from the counties was identified by maternity care coordinators.

Community Health Worker Recruitment: Not described but was patterned after the South Carolina "natural helpers" program. The community health advocates/MOWs received 60 hours of training each and worked with a maximum of 25 to 30 families per year.

Community Health Worker Interventions: Program services began before 28 weeks gestation and continued through the first birthday of the infant. Participants received prenatal home visits at least monthly from community health advocates. The MOWs encouraged using preventive health services, healthy behaviors, improving parenting skills, and enhanced psychological health.

Outcomes/Limitations: Two hundred twenty-one mothers who participated in the home visit program were compared with 198 who had not participated. Participants with more intensive home visit support had higher self-esteem and were less depressed. However, improvements in psychological functioning did not seem to be related to the specific type of support received.

Rico C. Community health advisors: emerging opportunities in managed care. Annie E. Casey Foundation, Seedco--Partnerships for Community Development, 1997.

Program: Not identified

Objective: To examine demand for community health advisors (CHAs), especially in managed care organizations and with Medicaid managed care. To evaluate whether developing a start-up community health advisor agency could create new jobs and influence the acceptance and use of community health advisors in health care.

Population and Location: New York, New York; Philadelphia, Pennsylvania; Milwaukee, Wisconsin; and Alameda and Solano counties in California.

Study Design: Interviews of CHA agency directors, managed care organization executives, public health official, directors of community health center and local funders. These interviews gathered information about CHAs and relationships between CHA agencies and managed care organizations. Conversations focused on developing an independent CHA agency that would contract with Medicaid managed care plans. The interviewers sought to understand reimbursement potential for CHA use.

Outcomes/Limitations: The interviewers found the market for CHA serves in managed care organizations was emerging. The interviewers found little data on cost effectiveness, but said what evidence there is suggests CHAs can help reduce the inappropriate use of emergency rooms, increase use of preventive and primary care, improve compliance with health regimens and improve outcomes for high risk patients, all of which have impacts on cost containment. Almost every city visited had, what could be considered, experimental contractual relationships between CHAs and managed care organizations, mostly in services for prenatal and maternal child health care. However, for CHAs to be used on a large scale by managed care organizations the effectiveness must be documented for both health outcomes and cost effectiveness; there must be consensus on definitions of services, pricing and payment; and the CHA provider must increase capacity to meet the demands of managed care organizations.

Rogers MM, Peoples-Sheps MD, Suchindran C. Impact of a social support program on teenage prenatal care use and pregnancy outcomes. J Adolesc Health 1996; 19 (2):132-40.

Program: Resource Mothers for Pregnant Teens Project

Objective: To evaluate the effectiveness of home visits to pregnant teens by resource mothers; to increase use of prenatal care use and improve teen pregnancy outcomes.

Population and Location: Thirteen rural and three moderately urban South Carolina counties. These counties were identified as having high pregnancy, abortion, and birth rates as well as poor perinatal outcomes in teens.

Study Design: Retrospective comparison study. Resource mothers (RMs) recruited pregnant teens to the program through community education and outreach, and through referrals such as the food program for WIC, prenatal clinics, human services agencies, school churches and physicians. The program targeted young, unmarried Black teens.

Community Health Worker Recruitment: RMs were local community paraprofessional health workers selected for personal warmth, successful parenting and knowledge of community resources.

Community Health Worker Interventions: RMs visited the homes of pregnant teens at least once a month before delivery. Information was provided about the need for early and regular health care, and reduction of smoking, drug use and poor nutrition.

Outcomes/Limitations: Those visited by the RMs were more likely to initiate early prenatal care and to receive adequate care than teens in other counties. Unmarried teens in the study group were less likely to have premature births than teens in other counties. Limitations to the

study were that it was retrospective and it was subject to selection bias, since it was not possible to randomize teens into program and control groups.

Rosenthal EL, Wiggins N, Brownstein JN et al. The final report of the National Community Health Advisor Study. A policy project of the Annie E. Casey Foundation. Tucson, AZ: University of Arizona, 1998.

Program: National Community Health Advisor Study; Weaving the Future, A policy research project of the University of Arizona funded by the Annie E. Casey Foundation.

Objective: To provide guidance and recommendations to policymakers and practitioners that could improve the overall status of the CHA field.

Population and Location: Two hundred eighty-one CHAs and program supervisors from 31 States and the District of Columbia completed the survey. A convenience sample was selected to represent a broad spectrum of programs and diverse geographic regions.

Study Design: Methods included a literature review, a survey, one-on-one interviews, site visits, group interviews, and focus groups. CHAs and supervisors completed an eight page survey about description of programs and pressing issues. A 36-member Advisory Council, representative of programs and regions, refined the agenda, interpreted data and developed recommendations.

Outcomes/Limitations: Most (82 percent) of those responding were currently working as CHAs. Most (66 percent) had worked as CHAs or supervisors for less than 3 years. More than half said the CHAs were of the same ethnicity as those they served. Most programs (85 percent) served Hispanic audiences. Over 50 health concerns were described as being addressed by programs with HIV/AIDS and cancer mentioned most often. Often described were women's health, prenatal care, maternal health, domestic violence and advocacy with poverty, housing, food, and employment. Most CHAs provided services in homes and community centers, followed by schools, clinics or hospitals, religious organizations, work sites, shelters and migrant labor camps. Key recommendations from this comprehensive study are to adopt and refine CHA roles and competencies; to promote a comprehensive research agenda; to develop evaluation guidelines and tools and to establish an evaluation database of evaluators, tools and findings; to establish a National certification program with core curriculum guidelines and supervisor training; to develop best practice guidelines for programs; to educate managed care organizations and State health agencies about CHAs; to build sustainability for programs through public policy and financing mechanisms; and to form a National association or organization to provide leadership to the field, with CHAs in key roles in governance.

Staten LK, Gregory-Mercado KY, Ranger-Moore J et al. Provider counseling, health education, and community health workers: the Arizona WISEWOMAN project. J Womens Health 2004; 13 (5):547-56.

Program: The Arizona WISEWOMAN Project

Objective: To increase women's physical activity and fruit and vegetable consumption over 1 year.

Population and Location: Two hundred seventeen women, three-fourths of whom were Hispanic, were recruited from two Tucson clinics.

Study Design: Participants were randomly assigned to three groups: professional counseling only; professional counseling and health education; professional counseling and health education and CHW support. Participants were recruited from those participating in the National Breast and Cervical Cancer Early Detection Program. Five hundred thirty-four were approached, 12 percent were not medically eligible, 12 percent chose not to participate; eight percent withdrew before the initial visit and one percent was dropped because of missing information. Others died, moved, became insured, or did not have insurance for the return visit.

Community Health Worker Recruitment: Six bilingual Hispanic women ages 50 and over. Most CHWs had been previously trained to provide outreach, translation, and transportation services to health clients.

Community Health Worker Interventions: Each CHW assigned up to 20 participants near her local area. She contacted participants by phone every 2 weeks to talk about benefits of eating more fruits and vegetables, other education, and invitations to bimonthly walks. At the walks, CHWs encouraged participants to find walking partners and support each other.

Outcomes/Limitations: Of the eligible participants, 67 percent, or 217, returned at 12 months. All groups increased physical activity levels. Only the group with CHW support significantly improved in meeting National recommendations for eating fruits and vegetables. The results were similar to other WISEWOMAN studies. The study is limited by a small sample size and lower follow-up rate than desirable, although this rate is not uncommon for minority follow-up.

Suarez L, Roche R, Pulley L et al. Why a peer intervention program for Mexican-American women failed to modify the secular trend in cancer screening. Am J Prev Med 1997; 13 (6):411-7.

Program: *Luces de Salud* (Lights of Health)

Objective: To determine if cancer control interventions to increase Pap smear and mammography screening among Mexican American women were effective.

Population and Location: Mexican American women ages 40 and older. Study population in El Paso, Texas; comparison community in Houston, Texas.

Study Design: Comparison of two Spanish-speaking, poverty-level immigrant communities (one with the intervention and one without) using pre- and post-test design.

Community Health Worker Recruitment: Staff recruited volunteers and role models by making about ten presentations each quarter with average attendance of 24. The network of volunteers ranged from 20 to 100 per quarter. Role models for the study were 45 Mexican American women, ages 40 or older, from low-income neighborhoods in central El Paso, who spoke only Spanish.

Community Health Worker Interventions: The intervention strategy used social modeling and social reinforcement based on Social Learning Theory. Early adopters of the desired behavior in the community served as role models. The media featured stories about these role models in local television, radio, and newspaper. Local volunteers reinforced the message verbally and distributed a quarterly bilingual newsletter that provided information about clinics with low-cost examinations.

Outcomes/Limitations: Results were identified from pre- and post-tests with residents of El Paso, Texas, and Houston, Texas. Peer intervention did not demonstrate a significant increase in screening in this group of Mexican American women in comparison to a control population. Program participants reported an increase of 6 percent in Pap smear and a 17 percent increase in mammography screenings; versus a 7 percent increase in Pap smears and a 19 percent increase in mammographies in the comparison population. The impact of the study interventions could not be isolated from other social forces at work with this population. There were some differences between the two communities. Those receiving the intervention were older, had lower incomes, and were more likely to be on public assistance for health care and to use Spanish. In addition, there were substantially fewer cancer care resources in El Paso, Texas, and Houston, Texas, relative to the population. The local health department was not able to gain media cooperation for developing and airing role model stories. Only 11 percent of women interviewed had heard of the program after the intervention. The ratio of volunteers to those participating was lower than previous studies. Other pervasive cancer-screening initiatives were a confounding factor to the study. The authors felt that program promotional activities were too diffuse to have an effect and the comparison community had multiple similar program exposures that made it difficult to measure the impact of any single health promotional program.

Sung JF, Blumenthal DS, Coates RJ et al. Effect of a cancer screening intervention conducted by lay health workers among inner-city women. Am J Prev Med 1997; 13 (1):51-7.

Program: Cooperative partnership with the National Black Women's Health Project (NBWHP)

Objective: To see if in-home education by lay health workers could increase adherence to breast and cervical cancer screening schedules.

Population and Location: Three hundred twenty-one low income, African-American women from diverse inner-city sources in Atlanta, Georgia, including contacting women in public housing projects, inner-city businesses and churches, and through the NBWHP.

Study Design: Participants were randomly assigned to either the intervention with lay health workers or a control group.

Community Health Worker Recruitment: Lay health workers were recruited from self-help support group leaders in a community women's health organization, the NBWHP. Each received 10 weeks of training in interviewing and health education topics.

Community Health Worker Interventions: Lay health workers visited those in the intervention group three times in their homes over a period of 11 months, and provided education on cancer screening, prevention, and encouragement to schedule appointments.

Outcomes/Limitations: There was an increase in screening for pap smears which was similar for both groups. There was a modest increase for clinical breast exams and a larger increase in mammography in the group visited by lay health workers. Limitations include difficulty in recruitment and retention, and an unwillingness to participate in research by those who may feel minorities were exploited by research in the past.

Swider SM. Outcome effectiveness of community health workers: an integrative literature review. Public Health Nurs 2002; 19 (1):11-20.

Objective: To review the literature indexed in key databases and document the effectiveness of CHWs, which could include providing increased access to care in underserved populations, better outcomes in increased health knowledge, or improved health outcomes and behavioral changes.

Population and Location: U.S. studies.

Study Design: Definitions for CHWs and synonyms for the term were established and criteria for the literature search were determined. Only U.S. studies and studies that focused on outcomes or effectiveness were included. The time frame of 1980 to 1999 was established. The databases MEDLINE and PubMed, HealthStar, CINAHL, EBM Review Best Evidence, and PsycInfo databases were searched for articles. Articles were examined and analyzed for frequencies, common themes, weaknesses, gaps, and need for future studies. Of 275 abstracts, only 19 studies reported in 20 articles met the criteria established and were reviewed.

Outcomes/Limitations: All studies documented the use of CHWs to serve hard to reach populations. Studies agree that outcomes should include culturally appropriate health education, increasing health care access and decreasing costs of care. Most of the included studies (74 percent) reported positive impacts in access to care. Over a third of articles did not measure outcomes in comparison to a control group. Of four studies on health status, three studies reported positive health status increases. Of the six studies on behavior change, five reported positive results from CHW programs. Only two studies address cost of care, and the results were inconclusive. In many articles (63 percent), the roles or details of the interventions provided by the CHWs were not reported, so the effectiveness could not be measured. The

author concludes that reports on CHWs show some promise, but many studies show lack of focus and documentation. More research is needed, and attention should be paid to strength of study design, documentation of CHW activities, and carefully defining target audiences. Work is needed to determine if CHWs are cost effective. Limitations were that only a few studies were identified for analysis. Detailed information on the reasons articles were excluded was not included.

Virginia Center for Health Outreach. Final report on the status, impact, and utilization of community health workers. Richmond, VA: James Madison University, Institute for Innovation in Health Human Services, 2005.

Program: James Madison University, Virginia Center for Health Outreach, House Document No. 9, Report directed by House Joint Resolution No. 195

Objective: Identify ways to elevate the role of CHWs in the health care system; to integrate CHWs into public agencies; to examine the potential of CHWs for Medicaid and other contacted providers; to explore the development of a statewide curriculum for training CHWs, and to recommend other steps to maximize the value and use of CHWs.

Population and Location: CHWs in Virginia.

Description: The final report offers seven recommendations for shaping a more effective and increasingly responsive health and human services workforce. The report provides descriptions of CHWs who work in multiple sectors. Collaboration with the Virginia Department of Human Resource Management has resulted in the addition of CHWs to the Direct Service Career Grouping within the Occupational Family of Health and Human Services.

Watkins E, Larson K, Harlan C et al. Model program for providing health services for migrant farmworker mothers and children. Public Health Rep 1990; 105 (6):567-75.

Program: SPRANS Project MCJ 373415, funded through the Health Resources and Services Administration, Maternal and Child Health Bureau

Objective: To develop a model program for primary health care service delivery for migrant farmworker women and children.

Population and Location: Migrant farmworker women and children up to 5 years of age in North Carolina receiving services at a migrant health center in North Carolina. Participants were 359 pregnant migrant farmworkers and 560 children who received primary care services between April 1985 and September 1987.

Study Design: Model program description and retrospective analysis of data.

Community Health Worker Recruitment: Migrant farmworker women with an ability to help others were recruited. They received classes in their native languages on health practices and health and social services. Classes were held at convenient locations such as labor camps, churches and the Migrant Head Start center. Forty-two women completed training to strengthen existing social networks and become leaders and advocates for their communities.

Community Health Worker Interventions: A multidisciplinary team delivered coordinated services including transportation, translation, follow-up, and advocacy. Staff included public health nurses, a nutritionist, and a social worker. On-site workers were Spanish speaking. One strategy trained migrant farmworker women as health advisors who offered home visits. The purpose of the program was not to create an extension of the center staff but to strengthen existing social networks. A subsequent project evaluated the impact of the LHAs.

Outcomes/Limitations: Project staff gathered and reported demographic, physical, nutritional and psychosocial information on migrant workers. By the end of the project, there were increased numbers of prenatal visits, more women entering prenatal care in the first trimester, and more use of well-child services. Project staff found LHAs were valuable in increasing consumer participation. Advisors were elected to the board of directors of the health center. Some LHAs testified at a Federal hearing on farmworker housing and others were motivated to continue their education. Only limitation was that a small part of the project was devoted to LHAs.

Watkins EL, Harlan C, Eng E et al. Assessing the effectiveness of lay health advisors with migrant farmworkers. *Fam Community Health* 1994; 16 (4):72-87.

Program: SPRANS grant 3736003 from the U.S. Department of Health and Human Services, Health Resources and Services Administration, Maternal and Child Health Bureau

Objective: To determine the extent to which assistance from lay health advisors was associated with improved health practices and status. To improve mother and infant health status and increase use of perinatal and child health services by expanding knowledge of maternal-child health and community resources.

Population and Location: Latina migrant farmworker women enrolled for prenatal care and infants receiving child health services at five health agencies in four North Carolina sites. Pregnant Latina farmworkers who sought treatment between October 1987 and December 1988 were enrolled in the study.

Study Design: Analysis of a data subset from a quasi-experimental longitudinal study. A program for recruitment, training and implementation of LHAs was implemented at two health centers, with two other sites serving as controls. The intervention lasted for 1 year. Pre-intervention and post-intervention data was compared for 290 mothers and 122 newborns.

Community Health Worker Recruitment: Project staff interviewed clinic staff, Migrant Head Start staff and outreach workers to identify Latina farmworker women with the following characteristics: leadership ability, empathetic and caring attitudes; interest in learning more about health; understanding of importance of sharing knowledge with others.

Community Health Worker Interventions: A total of 40 LHAs completed all 24 hours of training. Women were given minimum wage for time spent in training in the initial project but not for later training. Payment did not appear to have a relation to attrition rate. LHAs were given a knowledge test and a helping contacts questionnaire to assess the impact of the program. Members of the target population were given a knowledge test and an exposure

questionnaire to assess the effect of interactions. Groups were compared on knowledge of health practices, exposure to LHAs and health status and health practices.

Outcomes/Limitations: LHAs improved their health knowledge before and after training and retained their knowledge 6 weeks after training. They reported more than three helping contacts every 2 weeks, generally dealing with child care, family planning, prenatal care and cancer screening. Participants reported a greater frequency of assistance with child care problems than reported by LHAs. The majority of respondents (66 percent) interacted with LHAs. Overall, there was no difference in the number of prenatal visits, unless sites were examined separately. The authors speculate that the differences may be due to differences in how established the LHA programs were at different sites. Mothers with sick children and exposure to LHAs were more likely to bring those children for treatment. At the sites where LHAs were established, a higher proportion of women with LHA exposure made recommended numbers of prenatal visits. Limitations included data which was taken from five convenience samples, rather than a randomized controlled trial, which would have been difficult to administer. All clients could not be administered questionnaires due to small project size, so pre- and post-intervention comparisons might not reflect assistance provided by lay health advisors. There was substantial loss to follow-up of participants. The project of LHA intervention was limited to 1 year.

Weber B, Reilly B. Enhancing mammography use in inner city. A randomized trial of intensive case management. Arch Intern Med 1997; 157 (20):2345-9.

Program: Study conducted by HealthReach, the community outreach program of St. Mary's Hospital, the community teaching hospital for the University of Rochester School of Medicine and Dentistry.

Objective: To determine if use of community health educators (CHEs) and physician reminders would increase the rate of screening among the target population.

Population and Location: Women, ages 52 to 77, in the inner city of Rochester, NY, who had not had a screening mammogram in 2 years.

Study Design: Randomized controlled trial comparison of two interventions. Women in the MD group received a personalized letter reminding them to have mammograms. Those in the CHE group received the same letter followed by a second letter (written at a fourth grade reading level), in English and Spanish and signed by the local CHE. The CHE intervention included telephone calls, home visits, and removal of barriers to care.

Community Health Worker Recruitment: Six women from the community were recruited as CHEs. They were selected based on characteristics of literacy, communication skills, charisma, and concern about community health. CHE ethnicity was similar to those served.

Community Health Worker Interventions: CHEs worked with participants to increase knowledge of primary care, preventive care, mammogram screening, and overcoming barriers to care. All CHEs worked in the community approximately 50 percent of the time in soup kitchens, churches, health fairs, homeless shelters, emergency rooms, and more.

Outcomes/Limitations: Women in the CHE group were nearly three times more likely to receive screening mammograms than women in the MD group. Generalizability of the results is limited to those with similar characteristics, and the study did not isolate specific interventions that had more or less impact.

Weinrich S, Weinrich M, Stromborg M et al. Using elderly educators to increase colorectal cancer screening. *Gerontologist* 1993; 33 (4):491-6.

Program: Elderly Educator Method, Colorectal Cancer Project

Objective: To study the effects of four educational methods on elder participation in fecal occult blood screening.

Population and Location: Reports on 180 participants (recipients of meals) at 12 randomly selected Council on Aging congregate meal sites in South Carolina.

Most (75 percent or 171) of those receiving services agreed to participate in the study. Seventy-seven percent of the participants were female; 50 percent were Black and 50 percent were White; the average age was 72 years; the average education level completed was eighth grade; and more than half had incomes below the poverty level.

Study Design: Factorial design (2x2) used to compare four approaches to fecal occult blood screening. The study sites were divided into four groups. The traditional method served as a control. This was a presentation of the standard American Cancer Society (ACS) slide tape presentation and handout on colorectal cancer. Other approaches were adapted from the ACS presentation and handout. With the Elderly Educator method, elderly persons were used as teachers and demonstrators of the cancer presentation. The Adaptation for Aging Changes method used the ACS slide-tape presentation, but used techniques to allow for aging changes in learning. (The presentation was adapted to low reading levels, larger print was used and reminder notes were provided.) The Combination method combined both the Elderly Educator method and the Adaptation for Aging Changes method. Participants received education and were given occult blood kits to take home. Six days later a registered nurse returned for the kits.

Community Health Worker Recruitment: Elderly educators came from the local Aging Network and a high-rise apartment for the elderly.

Community Health Worker Interventions: Under the Elderly Educator and Combination methods, elderly people served as teachers, demonstrators, and role models. They encouraged conversation on sensitive or difficult topics by developing rapport and trust.

Outcomes/Limitations: Participants taught by Elderly Educator methods (93 percent in the Combination Group and 61 percent for the Elderly Educator only group) were more likely to participate in and return their fecal occult blood kits. In the other groups, 43 percent of those in the Adaptation for Aging Changes method and 56 percent of those in the Traditional method returned the kits for screening. The authors emphasize that high quality of recruitment and training is vital to success with the Elderly Educator method.

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APPENDIX A: SEARCH STRATEGIES

MEDLINE strategy

MEDLINE was searched using the Ovid interface. MEDLINE's controlled vocabulary, MeSH, has a term, Community Health Aides, which is frequently used to indicate promotora activity or related concepts. However, because it is not consistently used, a variety of other MeSH terms and textwords (words found in the titles and abstracts of MEDLINE articles) were also used, alone and in combination. Most of the textwords used were gleaned from articles found, so more terms were added to the strategy as the search progressed.

The following words and phrases were searched as textwords (note that Ovid's truncation symbol, which is necessary to pick up various word ending when textword searching, is \$): Community health worker\$ or promotora or promotore or promotores or promotoras or promotoros or promotera or promoter de salud or promoters de salud or consejera\$ or doula or doulas or barefoot doctor\$

The following textwords were also searched and combined with the MeSH terms Community Health Service or Social Environment (exploded to include narrower concepts) or community networks or social support or community health service to attempt to limit the results to articles in the community health arena: case worker\$ or community care coordinator\$ or community health advisor\$ or community health advocate\$ or community health aide\$ or community health educator\$ or community health outreach worker\$ or community health promoter\$ or community health representative\$ or community health worker\$ or indigenous health worker\$ or community worker\$ or lactation specialist\$ or lactation consultant\$ or lay health or lay leader\$ or lay volunteer\$ or health promoter\$ or family health care advisor\$ or health worker\$ or helper\$ or supporter\$ or home visitor\$ or natural caregiver\$ or natural helper\$ or neighborhood worker\$ or patient advocate\$ or patient navigator\$ or peer counselor\$ or peer health promoter\$ or peer educator\$ or teen educator\$ or resource mother\$ or support worker\$ or public health aide\$ or outreach worker\$ or outreach educator\$ or outreach specialist\$ or paraprofessional\$ or community helper\$ or canvasser\$ or family health counselor\$ or family health promoter\$ or health aide\$ or health assistant\$ or health care expediter\$ or health facilitator\$ or health guide\$ or health hostess\$ or health liaison\$ or health outreach worker\$ or indigenous environmental worker\$ or indigenous health aide\$ or indigenous health professional\$ or indigenous lay worker\$ or informal helper\$ or indigenous worker\$ or lay community health worker\$ or lay worker\$ or navigator\$ or neighborhood representative\$ or nonprofessional worker\$ or neighborhood-based public health worker\$ or volunteer health educator\$ or family health worker\$ or auxiliary health worker\$ or brigadista\$ or community health aide\$ or feldsher\$ or front line health worker\$ or kadre\$ or prokesa\$ or primary health care worker\$ or rural health assistant\$ or village health worker\$ or health visitor assistant\$ or traditional birth attendant\$ or community health extension worker\$ or health visitor assistant\$ or promoter\$ or helper\$ or peer\$ or volunteer\$ or church\$

The resulting list of articles was then limited to those concerning programs in the United States (by searching for the MeSH headings for the United States and all individual States) and was also limited to articles published in English.

Finally, in an attempt to limit to research studies and higher quality articles, the search was limited to the following study types: any type of clinical trial or congresses or consensus development conference or evaluation studies or guideline or meta analysis or multicenter study or practice guideline or randomized controlled trial or any type of review or twin study or validation studies.

CINAHL strategy

CINAHL, the nursing and allied health database was also searched using the Ovid database. CINAHL's controlled vocabulary has a term, Community Health Workers, which is frequently used to indicate promotora activity or related concepts. However, because it is not consistently used, a variety of other CINAHL terms and textwords were also used, alone and in combination.

The CINAHL term Volunteer Worker was searched, as were the textwords doula or doulas.

The following textwords were also searched and combined with the CINAHL term Community Health Services (exploded to include narrower concepts): community health aide or community health educator or community health outreach worker or community health promoter or community health representative or community health worker or promotora or promotore or promotores or promotoras or promotoros or promotera de salud or promoter de salud or case worker or consejera or community care coordinator or community health advisor or community health advocate or indigenous health worker or community worker or lactation specialist or consultant specialist or lay health outreach worker or lay health advocate or lay health advisor or lay health worker or lay leaders or lay volunteers or health promoter or family health care advisor or health worker or supporter or home visitor or natural caregiver or natural helper or neighborhood worker or patient advocate or patient navigator or peer counselor or peer health promoter or peer educator or teen educator or resource mother or support worker or public health aide or outreach worker or outreach educator or outreach specialist or paraprofessionals or doula or community helpers or community workers in human services or canvassers or family health counselors or family health promoters or health aides or health assistants or health care expeditors or health facilitators or health guides or health hostesses or health liaisons or health outreach workers or indigenous environmental workers or indigenous health aides or indigenous health professionals or indigenous lay workers or informal helpers or indigenous workers or lay community health workers or lay community health workers or lay workers or navigator or neighborhood representative or nonprofessional worker or neighborhood-based public health worker or volunteer health educators or family health worker or family health worker or auxiliary health workers or barefoot doctors or brigadistas or community health aides or community health promotores or feldshers or front line health workers or kadres or prokesa or promotores de salud or primary health care workers or rural health assistants or village health workers or health visitor assistants or traditional birth attendants or community health extension workers or health visitor assistants.

The resulting list of articles was then limited to those concerning programs in the United States. CINAHL's "research" limit was then used.

Social Work Abstracts strategy

Social Work Abstracts was also searched using the Ovid interface. The following terms were searched as either textwords or subject headings: promotora or promotoras or promotoro or promotores or promotoros or doula or doulas or consejera or consejeras

The terms community health or family health or rural health or village health or volunteer health or lay health or auxiliary or indigenous health were searched as textwords or subject headings, then combined with the following: worker\$ or aide\$ or advisor\$ or advocate\$ or coordinator\$ or educator\$ or promoter\$ or representative\$ or counselor\$ or assistant\$

SCOPUS strategy

The SCOPUS database covers a wide range of topics, including the sciences and business. The SCOPUS strategy was much narrower than the other strategies, because there are no subject headings, and the words used to describe promotoras are widely used in articles on other topics. It is also not possible to limit results to English, and words beginning “promotor” are widely used in science articles written in some other languages. The SCOPUS search was meant to pick up highly relevant articles that might have been missed in the other databases. The following words were searched in SCOPUS: promotora or promotore or community health aide.

