Cardiovascular Disease Prevention and Control: Interventions Engaging Community Health Workers

Summary Evidence Table – Studies with Greatest or Moderate Suitability of Study Design

Study designs include: individual or group randomized controlled trial, non-randomized trial, prospective cohort, case-control, other design with concurrent comparison group

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Author(s): Allen et al. 2011 **Location:** Maryland **Setting(s):** 2 community health centers part of the federally qualified health center entitled Baltimore Medical Systems Incorporated **Scale:** Study conducted at 2 federally qualified health centers. Of the 3899 patients screened for eligibility,525 were enrolled in the trial and randomly assigned to the NP/CHW intervention (n=261) or the enhanced UC group (n=264) **Design:** Randomized controlled trial **Intervention duration:** 12 months **Quality of Execution:** Fair (3 limitations) **Limitation(s):** Interpretation of Results -	**Inclusion:** LDL ≥ 100mg/dL OR LDL ≥ 130 mg/dL if not diagnosed with CVD OR diabetes + BP > 140/90 OR >130/80 in persons with diabetes OR renal insufficiency + HbA1c ≥ 7% OR glucose ≥125 mg/dL in persons with diabetes **Exclusion:** serious life-threatening non-cardiac co-morbidity OR serious physician-recorded psychiatric co-morbidity OR neurologic impairment precluding participation in their own care **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 54.3 yrs. Sex: Male: 28.3%; Female: 71.7% Race/ethnicity: White: 20.7%; Black/AA: 79.3% Education: <H.S.: 29.1%; H.S. grad: 45.2%; some	**CHW Activities:** CHWs met with participants for a one-on-one face-to-face session followed by f/u phone calls once a month for 6 months. CHW spent time with participants solving barriers to treatment adherence and reinforced instructions related to lifestyle modifications and medication therapies previously given by the nurse practitioner. CHW assisted participants in forming a set of reminders, prompts, logs, pill organizers, and alarm clocks, etc. to help participants achieve good medication adherence. **CHW Core Roles Met:** Providing culturally appropriate information and health education + ensuring people get the services they need + providing informal counseling and social support + building individual and community capacity **CHW Models of Care Met:** Member of care delivery team + screening and health education provider **CHW Characteristics:** CHW matched to population by:	**Blood Pressure Outcomes** **Change in SBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=261): 139.7 (23.8) Comparison (n=264): 138.7 (19.9) **12 Months:** Intervention (n=261): 130.8 (20.7) Comparison (n=264): 135.9 (20.5) **Change in mean difference = -6.2; p=0.003** **Change in DBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=216): 83.0 (12.7) Comparison (n=264): 82.3 (13.0) **12 Months:** Intervention (n=261): 77.4 (12.5) Comparison (n=264): 79.7 (12.6) **Change in mean difference = -3.1; p=0.013** **Cholesterol Outcomes** **Change in Total cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=261): 199.7 (46.0) Comparison (n=264): 191.3 (45.0) **12 Months:** Intervention (n=261): 172.7 (44.5) Comparison (n=264): 184.1 (41.9) **Change in mean difference = -19.7; p<0.001**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
proportion of patients with CVD events compared to those without CVD events are not provided + intervention and comparison group not comparable for total cholesterol and A1c at baseline + possible contamination as physicians saw patients from both the intervention and comparison group **Funding:** NIH, National Heart, Lung, and Blood Institute **Applicability:** For this study, mainly to female adults with Medicare or Medicaid receiving care for CVD risk factors by a nurse practitioner-CHW team at a federally qualified health center	college: 25.7% Low income: 52.5% Medicaid/Medicare: 40.6% No health insurance: 16.5% Unemployed: 57.9% **Reported Risk Factors [Intervention Participants]:** Co-morbidity Score: mean (SD): 1.6 (1.3)	NR Payment: NR Educational background: NR Years of experience: study states that CHWs had prior experience working with underserved minority populations Supervisor: nurse CHW performance evaluation: A quality assurance plan was in place to assure adherence to study protocol. Treatment algorithms were also used to promote intervention integrity Recruitment: NR Training: CHWs were trained in disease pathophysiology of CHD and diabetes, and therapeutic lifestyle management approaches of nutrition and physical activity. They were also trained in motivational interviewing and behavior change techniques **Other provider(s):** nurse practitioner + physician **Other provider(s) activities:** Nurse practitioners (NP) oversaw the initial patient assessment and tailored the intervention plan, conducted the intervention including lifestyle modification, counseling, medication titration, and prescribing medications, and consulted with the physician and supervised the CHW. **Community Partners Involved:** community-provider advisory	**Change in LDL-C (mg/dL)** **Baseline: Mean (SD)** Intervention (n=261): 121.6 (40.0) Comparison (n=264): 116.3 (40.5) **12 Months:** Intervention (n=261): 100.1 (39.2) Comparison (n=264): 110.6 (36.8) **Change in mean difference = -15.9; p<0.001** **Change in HDL-C (mg/dL)** **Baseline: Mean (SD)** Intervention (n=261): 50.8 (14.7) Comparison (n=264): 50.9 (13.6) **12 Months:** Intervention (n=261): 49.4 (13.5) Comparison (n=264): 49.9 (12.9) **Change in mean difference = -0.4; p=0.497** **Change in triglycerides (mg/dL)** **Baseline: Mean (SD)** Intervention (n=261): 138.1 (93.4) Comparison (n=264): 126.8 (71.5) **12 Months:** Intervention (n=261): 121.3 (81.6) Comparison (n=264): 123.1 (72.2) **Change in mean difference = -16.3; p=0.013** **Diabetes Outcomes** **Change in A1c (%)** **Baseline: Mean (SD)** Intervention (n=261): 8.9 (2.2) Comparison (n=264): 8.3 (1.9) **12 Months:** Intervention (n=261): 8.3 (2.2) Comparison (n=264): 8.2 (2.1) **Change in mean difference = -0.50; p=0.034** **Additional Outcomes:** N/A

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		committee was formed including: other consumers and patients + physicians + nurses + community outreach workers **Comparison Group:** Participants in the comparison group received their baseline lipids, BP, and HbA1c measures along with the recommended goal levels. They also received a pamphlet on controlling risk factors from the American Heart Association. Providers also received copies of the American Heart Association/American College of Cardiology Guidelines for Secondary Prevention	**Summary**: Significant reductions in SBP, DBP, total cholesterol, LDL-C, triglycerides, and A1c were observed in participants who received care for CVD risk factors by a nurse practitioner-CHW team. A non-significant reduction in HDL was also observed.
Author(s): Balcazar et al. 2010 **Location:** Texas **Setting:** non-academically affiliated primary care center: Centro San Vicente (CSV), El Paso, TX **Scale:** Ten U.S. Census tracts; Eligible: 568 people; agreed to participate: 407, Baseline: 328 (81%) were measured at baseline (192 in the experimental group and 136 in the control group) Follow-up: 284 were measured at follow-up (158 in the experimental group and 126 in the control group); Retention rate:87% + 3 promotores	**Inclusion:** Hispanic + aged 30 to 75 yrs. + have at least one self-reported risk factor for CVD (smoking, overweight or obese, diabetes, hypertension, or high cholesterol) **Exclusion:** Pregnancy OR, having a history of CVD, OR not planning to stay in El Paso for the remainder of the study **Reported Baseline Demographics [Intervention Arm]:** Age (mean): 53.5 yrs. Sex: Male: 25.0%; Female: 75.0% Race/ethnicity: Hispanic: 100%	**CHW Activities:** CHW delivered the salud para su corazon curriculum a user-friendly, biligual program for promotoras developed by NHLBI specifically for Latino communities. The program included information on hypertension, high cholesterol, diabetes, and heart healthy behaviors. One-on-one telephone sessions and group sessions were offered weekly for 2 hours per session. **CHW Core Roles Met:** providing culturally appropriate information and health education + ensuring people get services they need + building individual and community capacity **CHW Models of Care Met:** screening and health education provider	**Blood Pressure Outcomes** **Proportion with BP at goal (%)** **Baseline:** Intervention (n=192): 71% Control (n=136): 57% **4 Months:** Intervention (n=192): 80.5% Comparison (n=136): 77.5% **Absolute pct pt change: -11.0; 95% CI: -19.8, -2.3** **Change in SBP (mmHg)** **Baseline: mean (SD)** Intervention (n=192): 137.2 (21.8) Comparison (n=136): 141.4 (20.5) **4 Months:** Intervention (n=158): 132.6 (19.4) Comparison (n=126): 130.5 (16.7) **Change in mean difference: 6.3; p=0.2**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Design: Group randomized controlled trial **Intervention duration:** 4 months **Quality of Execution:** Good (1 limitation) **Limitation(s):** Interpretation of Results - significant differences between intervention and comparison groups at baseline for birthplace and language spoken **Funding:** National Center for Minority Health Disparities (NIH) **Applicability:** For this study, mainly to low-income, Hispanic/Latino women receiving the Salud Para Su Corazon curriculum via group sessions at a primary care clinic	Education (mean): 9.7 yrs. Low income: 75% (<$20,000) No Health Insurance: 44.0% Unemployed: NR **Reported Risk Factors [Intervention Arm]:** High SBP: 37.0% High DBP: 21.0% Diabetes: 35.0% Smoking: 27.0% BMI (mean): 31.7 kg/m^2 (obese)	**CHW Characteristics:** CHW matched to population by: Language + race/ethnicity + Location Payment: Promotores were paid Educational background: NR Years of experience: Unclear; study states that promotores in this study previous experience but length was not reported Supervisor: NR CHW performance evaluation: NR Recruitment: Promotores recruited via existing paraprofessionals Training: Received training via didactic lecture on Su Corazon Su Vida curriculum hypertension, hyperlipidemia, and diabetes **Other provider(s):** N/A **Other provider(s) activities**: N/A **Community Partners Involved:** (CBPR approach used) University of Texas at El Paso + the UT School of Public Health + El Paso Community College + priest + clinics + CHW network organizations + police chief + influential business people + parent liaison of an elementary school **Comparison Group:** Those assigned to the control group	**Change in DBP (mmHg)** **Baseline: mean (SD)** Intervention (n=192): 80 (10.9) Comparison (n=136): 89.4 (16.3) **4 Months:** Intervention (n=158): 79.8 (9.3) Comparison (n=126): 75.5 (10.6) **Change in mean difference: 13.7; p<0.001** **Cholesterol Outcomes** **Change in Total Cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=192): 197.5 (48.5) Comparison (n=136): 190.5 (38.5) **4 Months:** Intervention (n= 158):189.5 (54.5) Comparison (n=126): 195.2 (42.7) **Change in mean difference = -12.7; p=0.03** **Change in LDL (mg/dL)** **Baseline: Mean (SD)** Intervention (n=192): 127.6 (36.2) Comparison (n=136): 120.2 (31.9) **4 Months:** Intervention (n= 158):118.6 (37.8) Comparison (n=126): 123.0 (33.8) **Change in mean difference = -11.8; p=0.2** **Change in HDL (mg/dL)** **Baseline: Mean (SD)** Intervention (n=192): 40.6 (11.2) Comparison (n=136): 42.6 (10.7) **4 Months:** Intervention (n= 158):41.6 (10.2) Comparison (n=126): 41.5 (11.2) **Change in mean difference = 2.1; p=0.98** **Change in Triglycerides (mg/dL)** **Baseline: Mean (SD)** Intervention (n=192): 134.7 (71.5)

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
		were given basic educational materials from the "Your Heart, Your Life" curriculum at the baseline assessment. No CHW involvement was provided to the control group.	Comparison (n=136): 139.1 (82.8) **4 Months:** Intervention (n= 158):143.6 (78.6) Comparison (n=126): 139.3 (94.5) **Change in mean difference = 8.7; p=0.64** **Diabetes Outcomes** **Change in A1c (%)** **Baseline: Mean (SD)** Intervention (n=192): 6.6 (1.5) Comparison (n=136): 6.3 (1.3) **4 Months:** Intervention (n= 158):6.5 (1.4) Comparison (n=126): 6.6 (1.4) **Change in mean difference = -0.4; p=0.09** **Change in Fasting Blood Glucose (mg/dL)** **Baseline: Mean (SD)** Intervention (n=192): 101.5 (40.3) Comparison (n=136): 95.3 (31.7) **4 Months:** Intervention (n= 158): 101.9 (39.8) Comparison (n=126): 102.7 (42.2) **Change in mean difference = -7.0; p=0.8** **CVD Risk Score Outcomes** **Change in Framingham Risk Score** **Baseline: Mean (SD)** Intervention (n=192): 15.5 (13.2) Comparison (n=136): 14.3 (11.9) **4 Months:** Intervention (n=158): 10.4 (7.8) Comparison (n=126): 9.5 (6.7) **Change in mean difference = -0.3; p=0.26** **BMI/Weight Outcomes** **Change in BMI (kg/m^2)** **Baseline: Mean (SD)** Intervention (n=192): 31.7 (6.8) Comparison (n=136): 31.1 (6.4)

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			4 Months: Intervention (n= 158): 31.1 (6.3) Comparison (n=126): 31.3 (6.7) **Change in mean difference = -0.8; p=0.28** **Change in weight (lbs)** **Baseline: Mean (SD)** Intervention (n=192): 181.8 (39.1) Comparison (n=136): 183.1 (42.5) **4 Months:** Intervention (n= 158): 180.5 (37.5) Comparison (n=126): 181.1 (44.2) **Change in mean difference = 0.7; p=0.44** **Additional Outcomes (see separate table):** Smoking **Summary**: There were non-significant reductions in TC, LDL, HDL, HbA1c, Fasting Blood Glucose and BMI. However, there was an unfavorable change in proportion with BP at goal, SBP and DBP, TG and weight in participants receiving the Salud Para Su Corazon curriculum.
Author(s): Becker et al. 2005 **Location:** Maryland **Setting(s):** community center + YMCA **Scale:** Study included 1 nonclinical community center and 1 CHW. A total of 102 families were randomized to the CHW intervention and 92 families were randomized to the comparison group **Design:** Group randomized controlled trial	**Inclusion:** 30-59 yrs. of age + one or more of the following risk factors: current smoking, fasting LDL ≥130 mg/dL, SBP ≥140 mmHg, DBP ≥ 90 mmHg **Exclusion:** known history of CAD + chronic glucocorticosteroid therapy + autoimmune disease + current cancer therapy + immediate life-threatening co-morbidity **Reported Baseline Demographics [Intervention**	**CHW Activities:** CHWs saw participants for all dietary counseling, smoking cessation, and exercise counseling via one-on-one face-to-face sessions. Additional telephone sessions to monitor participant progress were also available. CHWs also conducted two free evening exercise sessions at the YMCA for included participants **CHW Core Roles Met:** Bridging/cultural mediation between community and healthcare system + ensuring people get services they need + providing informal counseling and social support	**Blood Pressure Outcomes** **Proportion with BP at goal (%)** **Baseline:** Intervention (n=NR): 0% Comparison (n=NR): 0% **12 Months; BP < 140/90 mmHg:** Intervention (n=NR): 62.5% Comparison (n=NR): 40.0% **Absolute pct pt change = 22.5** **Change in SBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=196):139.0 (16.0) Comparison (n=168): 137.0 (16.0) **12 Months:** Intervention (n=196): 130.0 (14.0) Comparison (n=168): 134.0 (17.0)

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Intervention duration: 12 months **Quality of Execution:** Fair (2 limitations) **Limitation(s):** Sampling - sampling frame not adequately described Interpretation of Results - f/u <80% **Funding:** NIH, National Heart, Lung, and Blood Institute + Johns Hopkins Clinical Research Center + Pfizer Pharmaceuticals + Novaris Pharmaceuticals + GlaxoSmithKline USA + SmithKline Beecham **Applicability:** For this study, mainly to female African American participants with CVD risk factors receiving care from a nurse practitioner-CHW team at a nonclinical community center under supervision of a study physician.	**Participants]:** Age (mean): 47.6 yrs. Sex: Male: 39.0%; Female: 61.0% Race/ethnicity: Black/AA: 100% Education: NR Low income: NR Private health insurance: 80.0% Unemployed: 80.0% **Reported Risk Factors [Intervention Participants]:** Diabetes: 18.0% Current Smoker: 37.0% BMI (mean): 31.9 kg/m^2 (obese)	**CHW Models of Care Met:** Member of care delivery team + navigator + Screening and health education provider **CHW Characteristics:** CHW matched to population by: NR Payment: NR Educational background: NR Years of experience: NR Supervisor: unclear whether supervised by nurse practitioner CHW performance evaluation: NR Recruitment: NR Training: NR **Other provider(s):** Nurse practitioner (NP) + physician **Other provider(s) activities**: NP performed brief physical assessments including BP monitoring and evaluated medications and monitored compliance. All changes in medications were communicated to the participants' PCP. Medications were provided at no cost. Progress of each participant was reviewed twice monthly by the study physician **Community Partners Involved:** community advisory panel helped design community center where study was conducted	**Change in mean difference = -6.0; p<0.0001** **Change in DBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=196): 89.0 (10.0) Comparison (n=168): 86.0 (11.0) **12 Months:** Intervention (n=196): 84.0 (9.0) Comparison (n=168): 85.0 (10.0) **Change in mean difference = -4.0; p=0.0002** **Cholesterol Outcomes** **Proportion with LDL-C at goal (%)** **Baseline:** Intervention (n=NR): 0% Comparison (n=NR): 0% **12 Months; LDL<130 mg/dL** Intervention (n=NR): 51.3% Comparison (n=NR): 22.4%% **Absolute pct pt change = 28.9** **Change in LDL-cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=196): 138.8 (38.7) Comparison (n=168): 135.7 (38.7) **12 Months:** Intervention (n=196): 118.3 (38.7) Comparison (n=168): 130.7 (38.7) **Change in mean difference = -15.5; p<0.0001** **Change in HDL-cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=196): 54.1 (16.2) Comparison (n=168): 53.8 (17.4) **12 Months:** Intervention (n=196): 54.1 (15.9) Comparison (168): 53.8 (16.6) **Change in mean difference = 0; p=0.977** **Change in Triglycerides (mg/dL)**

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		Comparison Group: Participants in the comparison group received risk-specific education materials and their primary care providers were given a copy of their baseline results as well as the ATP II, JNC-VI, and AHRQ smoking cessation guidelines. Medications were offered at no-cost; however, participants had to inquire about it.	**Baseline: Mean (SD)** Intervention (n=196): 130.2 (97.4) Comparison (n=168): 121.3 (63.8) **12 Months:** Intervention (n=196): 119.6 (88.60) Comparison (n=168): 118.7 (62.0) **Change in mean difference = -8.0; p=0.28** **Diabetes Outcomes** **Change in Fasting Blood Glucose (mg/dL)** **Baseline: Mean (SD)** Intervention (n=196): 109.9 (52.3) Comparison (n=168): 103.9 (45.0) **12 Months:** Intervention (n=196): 107.6 (48.6) Comparison (n=168): 109.4 (54.0) **Change in mean difference = -7.7; p=0.03** **Weight/BMI Outcomes** **Change in BMI (kg/m^2)** **Baseline: Mean (SD)** Intervention (n=196): 31.9 (6.3) Comparison (n=168): 31.1 (6.7) **12 Months:** Intervention (n=196):31.8 (6.4) Comparison (n=168): 31.1 (6.7) **Change in mean difference = -0.1; p=0.81** **CVD Risk Score Outcomes** **Change in Framingham Risk Score** **Baseline: Mean (SD)** Intervention (n=196): 9.45 (6.9) Comparison (n=168): 9.0 (6.80) **12 Months:** Intervention (n=196): 7.0 (4.90) Comparison (n=168): 8.72 (6.60) **Change in mean difference = -2.2; p<0.0001** **Additional Outcomes (see separate table):** Smoking, nutrition, physical activity

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			Summary: Substantial increases in the proportion of participants with BP and LDL-C at goal were observed along with significant reductions in SBP, DBP, LDL-C, fasting blood glucose, and CVD risk. Non-significant reductions were observed for triglycerides and BMI.
Author(s): Chen et al. 2010 **Location:** California **Setting(s):** San Francisco General Hospital Family Health Center **Scale:** A total of 11 health coaches participated in the intervention that included 1 family health center and 150 participants **Design:** Before-After with comparison **Intervention duration:** 12 months **Quality of Execution:** Fair (3 limitations) **Limitation(s):** Measurement -_variability of BP measurements was not controlled as values were gathered from clinical chart review Interpretation of Results - significant baseline differences between intervention and	**Inclusion:** active patient transferred from graduating 3rd year resident to incoming 1st year resident + had at least one medical visit in the previous 2 years + diagnosed with hypertension and/or diabetes **Exclusion:** patient with severe mental illness OR dementia **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 62.4 yrs. Sex: Male: 37.0%; Female: 63.0% Race/ethnicity: NR Education: NR Low income: NR Health insurance: NR Unemployed: NR **Reported Risk Factors [Intervention Participants]:** High BP: 32.0%	**CHW Activities:** The health coaches expanded physician visits with a pre-visit for agenda-setting and medication reconciliation, and a post-visit to engage patients in behavior-change action plans and to check patient understanding and agreement with the clinician's care plan. In addition, health coaches called patients between visits to follow-up on action plans and medication adherence and to help patients problem-solve and navigate the health care system. Health coaches generally saw two to four patients during each clinic. **CHW Core Roles Met:** Providing culturally appropriate information and health education + ensuring people get services they need + providing informal counseling and social support **CHW Models of Care Met:** Member of care delivery team + navigator + screening and health education provider **CHW Characteristics:** CHW matched to population by: Language Payment: CHWs were paid (not specified)	**Blood Pressure Outcomes** **Proportion with BP at goal (%)** **Baseline:** Intervention (n=146): 48.7% Comparison (n=395): 41.4% **12 Months; BP < 140/90 mmHg:** Intervention (n=146): 56.5% Comparison (n=395): 45.4% **Absolute pct pt change = 3.8; 95% CI: -5.6 to 13.2** **Cholesterol Outcomes** **Proportion with LDL at goal (%)** **Baseline:** Intervention (n=146): 49.1% Comparison (n=395): 52.5% **12 Months:** Intervention (n=146): 58.6% Comparison (n=395): 58.8% **Absolute pct pt change = 3.2; p=0.08** **Diabetes Outcomes** **Proportion with A1c at goal (%)** **Baseline:** Intervention (n=146): 26.7% Comparison (n=395): 25.9% **12 Months; A1c < 7.0%** Intervention (n=146): 36.7% Comparison (n=395): 34.8% **Change in mean difference = 1.1; 95% CI: -8.0 to 22.2**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
comparison groups for language and diagnosis + possible contamination, as year one residents were taught by upper level residents who also cared for the comparison group **Funding:** Centers for Disease Control and Prevention **Applicability:** For this study, mainly to participants with high blood pressure and diabetes who have a usual source of medical care and receiving health coaching from community health workers.	Diabetes: 16.0% High BP AND diabetes: 51.0%	Educational background: NR Years of experience: NR Supervisor: clinic faculty CHW performance evaluation: CHWs were evaluated by faculty staff via periodic observations and feedback Recruitment: CHWs were recruited via interpersonal contact + existing medical assistants Training: CHWs participated in health coach training along with the other nursing staff and medical assistants **Other provider(s):** physicians (year one residents) **Other provider(s) activities:** Residents provided usual medical care to assigned participants. Residents, health workers, and supervising faculty huddled during the first 30 min. of clinic, discussing scheduled patients and prioritizing higher risk patients for coaching. **Community Partners Involved:** N/A **Comparison Group:** participants in this group received usual medical care by 3rd year residents, but did not receive any health coaching from community health workers	**Additional Outcomes:** N/A **Summary:** Non-significant increases in the proportion of participants achieving BP control, LDL control, and A1c control were observed in those receiving health coaching by community health workers both before and after their usual medical appointment.

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Author(s): Cooper et al. 2011 **Location:** Maryland, USA **Setting:** four sites with Baltimore Medical System, 2 sites with Total Health Care, three sites at Jai Medical Group, and five other independent practice locations; five primary care sites with Johns Hopkins Community Physicians **Scale:** 14 urban community-based primary care sites; fifty physicians were randomly assigned to the study intervention groups with 41 participating in the study; 279 patients were randomized to study interventions. **Design:** Randomized controlled trial **Intervention duration:** 12 months **Quality of Execution:** Fair (3 limitations) **Limitation(s):** Interpretation of Results - Recruitment target not reached + significant differences between intervention and comparison groups at baseline for income,	**Inclusion:** ≥ 18yrs. old + diagnosis of hypertension (at least one claim with the ICD-9 code 401 in the preceding year) + were able to provide contact information for themselves and at least one other person. **Exclusion:** Too acutely ill, disoriented, or unresponsive to complete the baseline assessment + those with medical conditions that might limit their participation in the study (e.g., AIDS/HIV, schizophrenia, cancer (except skin), Alzheimer's or other forms of dementia + end-stage renal disease, congestive heart failure, or active tuberculosis **ARM 1: PHYSICIAN + PATIENT INTENSIVE INTERVENTION** **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 59.7 yrs. Sex: Male: 34.9%, Female: 65.1% Race/ethnicity: White: 34.9%; Black/AA: 62.6%; Asian:2.4% Education (mean):11.3 yrs. Low income: 84.2%	**CHW Activities (BOTH ARMS):** Participants met with the CHW for a one-on-one pre-visit coaching session prior to meeting with their physician for 20 min. and a 10-minute debrief after the medical appointment. CHWs asked about changes to physician interactions and provided pocket–sized diaries for patients to record their appointments, medications, and questions; and helped patients identify sources of support for their new behaviors and strategies to overcome anticipated problems. In addition, 10-15 min follow-up calls were provided every 3 months along with an educational photonovel **CHW Core Roles Met (BOTH AMRS):** providing culturally appropriate information and health education + providing informal counseling and social support + building individual and community capacity **CHW Models of Care Met (BOTH AMRS):** Member of care delivery team + screening and health education provider **CHW Characteristics (BOTH ARMS):** CHW matched to population by: Location Payment: Unclear Educational background: NR Years of experience: NR Supervisor: NR	**ARM 1: PHYSICAN + PATIENT INTENSIVE INTERVENTION** **Blood Pressure Outcomes** **Change in SBP (mmHg)** **Baseline: mean (SD)** Intervention (n=NR): 138.3 (22.8) Comparison (n=NR): 133.8 (18.6) **12 Months:** Intervention (n=NR): NR Comparison (n=NR): NR **Change in mean difference = -2.7 ; p=0.58** **Change in DBP (mmHg)** **Baseline: mean (SD)** Intervention (n=NR): 76.8 (14.1) Comparison (n=NR): 73.6 (12.4) **12 Months:** Intervention (n=NR): NR Comparison (n=NR): NR **Change in mean difference = 0; p=0.1** **ARM 2: PHYSICIAN MINIMAL + PATIENT INTENSIVE INTERVENTION** **Blood Pressure Outcomes** **Change in SBP (mmHg)** **Baseline: mean (SD)** Intervention (n=NR): 137.2 (19.1) Comparison (n=NR): 133.8 (18.6) **12 Months:** Intervention (n=NR): NR Control (n=NR): NR **Change in mean difference = -6.4; p=0.2** **Change in DBP (mmHg)** **Baseline: mean (SD)** Intervention (n=NR): 75.6 (13.3) Comparison (n=NR): 73.6 (12.4) **12 Months:**

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diabetes, and depression + f/u < 80% **Funding:** NIH, National Heart, Lung, and Blood Institute **Applicability:** For this study, mainly to low-income persons with high blood pressure or diabetes receiving Medicare or Medicaid and attending pre-coaching sessions by a health coach prior to seeing their primary care provider.	(<$35000) Medicaid: 34.2% Unemployed: 24.7% **Reported Risk Factors [Intervention Participants]:** High BP: 100% Diabetes: 43.9% Pre-existing CVD event: 13.2% Depression: 24.4% **ARM 2: PHYSICIAN MINIMAL + PATIENT INTENSIVE INTERVENTION** **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 63.7 yrs. Sex: Male: 28.1%, Female: 71.9% Race/ethnicity: White: 31.6%; Black/AA: 66.7%; Asian:1.8% Education (mean): 12.2 yrs. Low income: 66.7% (<$35000) Medicaid: 26.8% Unemployed:16.7%	CHW performance evaluation: NR Recruitment: NR Training: NR **Other provider(s) (BOTH ARMS):** Physician **ARM 1: PHYSICIAN + PATIENT INTENSIVE** **Other provider(s) activities**: physicians in this group received continuing medical education communication skills training program based on models previously shown to be effective in improving physicians' interviewing skills and patient outcomes **Arm 2: PHYSICIAN MINIMAL + PATIENT INTENSIVE** **Other provider(s) activities**: Physicians did not receive any further intervention. **Community Partners Involved:** N/A **Comparison Group:** participants assigned to this group received a five-minute welcome to the study and an educational newsletter about hypertension. Providers were also given a copy of the JNC-VII guidelines at baseline and a monthly newsletter with study updates and summaries of recent journal articles related to CVD	Intervention (n=NR): NR Control (n=NR): NR **Change in mean difference = -1.1; p=0.7** **Additional Outcomes (see separate table):** Medication Adherence **Summary**: Non-significant reductions in SBP were observed for both interventions arms. A non-significant reduction in DBP for the physician minimal + patient intensive intervention arm was observed, while there was no change for the physician + patient intensive intervention.

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
	Reported Risk Factors [Intervention Participants]: High BP: 100% Diabetes: 58.2% Pre-existing CVD event: 20.0% Depression: 13.0%		
Author(s): Daniels et al. 2012 **Location:** Georgia **Setting:** local churches **Scale:** 4 churches were assigned to intervention or comparison group; 12 CHWs were selected for participation and 47 participants were recruited for the study (25 participants have pre and post-test knowledge scores) **Design:** Group randomized controlled trial (treated control) **Intervention duration:** 6 weeks **Quality of Execution:** Fair (3 limitations) **Limitation(s):** Interpretation of Results_- f/u < 80% + demographic characteristics not stratified by group to determine	**Inclusion:** For Churches: location within the urban core + a congregation of more than 50% African American + an established health ministry within the church For participants: African American + ≥ 18 yrs. old + ability to speak English + member of the church or residence in the community + diagnosis with 1 of the ABC risk factors by self-report OR being at risk for ABC risk factors by either self-reported family history: diabetes, hypertension, or hyperlipidemia and/or being overweight (BMI 25-29.9) or obese (BMI>30) **Exclusion:** NR **Reported Baseline Demographics [Intervention Participants]:** Age (mean): NR Sex: Male: 32.0%, Female: 68.0%	**CHW Activities:** CHWs delivered 6 weekly sessions at the local church covering the ABCD risk factors. Between weekly sessions, CHWs were available via phone for peer counseling or to help participants navigate through the health care system. These sessions were initiated by the participant. **CHW Core Roles Met:** Bridging/cultural mediation between community and the health care system + providing culturally appropriate information and health education + providing informal counseling and social support + building individual and community capacity **CHW Models of Care Met:** Navigator + screening & health education provider **CHW Characteristics:** CHW matched to population by: Race/ethnicity + location + personal experience Payment: CHWs received a stipend covering their time and travel to study sites	**Blood Pressure Outcomes** **Change in SBP (mmHg)** **Baseline: mean (SD)** Intervention (n=13): 137.7 (NR) Comparison (n=NR): NR **1.5 Months:** Intervention (n=13): 133.5 (NR) Comparison (n=NR): NR **Change in mean difference = 2.4; p=0.8** **Change in DBP (mmHg)** **Baseline: mean (SD)** Intervention (n=13): 84.7 (NR) Comparison (n=NR): NR **1.5 Months:** Intervention (n=13): 78.4 (NR) Comparison (n=NR): NR **Change in mean difference = -8.7; p= 0.1** **Cholesterol Outcomes** **Change in total cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=13): 175.9 (NR) Comparison (n=NR): NR **1.5 Months:** Intervention (n=13): 175.9 (NR) Comparison (n=NR): NR **Change in mean difference = 20.6; p=0.5** **Change in LDL-C (mg/dL)**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
whether groups were comparable at baseline + sample size <20 **Funding:** Astra Zeneca Pharmaceuticals **Applicability:** For this study, mainly to low-income Black/African American women with high blood pressure attending 6 weekly educational sessions at local churches delivered by CHWs	Race/ethnicity: Black:100% Education: some college 60.0% Low income: 100% Health insurance: NR Unemployed: NR **Reported Risk Factors [Intervention Participants]:** High BP: 80% (SBP>139 mmHg) Hyperlipidemia: 25% (High LDL)	Educational background: NR Years of experience: NR Supervisor: Practice Nurse CHW performance evaluation: NR Recruitment: CHWs were recruited via interpersonal contact as pastors were asked to recommend people from their congregation Training: CHWs participated in 16 hours of training delivered in the churches by the study's principal investigator and were required to pass an online course of protections of human subjects; CHWs assigned to intervention churches received extra training in how to make the sessions interactive using hands on approach with return demonstrations from participants **Other provider(s):** NR **Other provider(s) activities**: NR **Community Partners Involved:** community-churches **Comparison Group:** Participants in the control group also attended 6 weekly sessions at each of the 2 churches. Topics (same as for the intervention group) were presented by a physician using a lecture format (40 min.) with a 20-minute question-and-answer period, and the CHWs were not available to answer questions or	**Baseline: Mean (SD)** Intervention (n=12): 97.3 (NR) Comparison (n=NR): NR **1.5 Months:** Intervention (n=12): 113.4 (NR) Comparison (n=NR): NR **Change in mean difference = 30.7; p= 0.4** **Change in HDL-C (mg/dL)** **Baseline: Mean (SD)** Intervention (n=13): 51.2 (NR) Comparison (n=NR): NR **1.5 Months:** Intervention (n=13): 44.3 (NR) Comparison (n=NR): NR **Change in mean difference = -7.2; p= 0.3** **Change in Triglycerides (mg/dL)** **Baseline: Mean (SD)** Intervention (n=12): 128.4 (NR) **1.5 Months:** Intervention (n=12): 103.7 (NR) **Change in mean difference = -24.8; p=0.14** **Diabetes Outcomes** **Change in A1c (%)** **Baseline: Mean (SD)** Intervention (n=19): 6.4 (NR) Comparison (n=NR): NR **1.5 Months** Intervention (n=13): 6.4 (NR) Comparison (n=NR): NR **Change in mean difference = -0.6; p=0.03** **BMI/Weight Outcomes** **Change in weight (lbs)** **Baseline: Mean (SD)** Intervention (n=12): 199 (NR) Comparison (n=NR): NR **1.5 Months:**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
		provide support after the weekly sessions.	Intervention (n=12): 197.1 (NR) Comparison (n=NR): NR **Change in mean difference = 0.09; p=0.99** **Additional Outcomes:** N/A **Summary**: Non-significant reductions in DBP and triglycerides and a significant reduction HbA1c was observed in participants receiving the CHW-led education sessions. However, unfavorable results were seen for SBP, TC, LDL, HDL and weight for the CHW-led intervention compared to the physician-led intervention
Author(s): El-Fakiri et al. 2008 **Location:** Netherlands **Setting:** 3 primary health care centers with 18 GPs located in deprived neighborhoods **Scale:** 5 practices within 3 primary health care practices with 18 general practitioners. A total of 275 participants were randomly allocated to the intervention (n=137) or the control group (n=138). **Design:** Randomized controlled trial **Intervention duration:** 9 months **Quality of Execution:** Fair (4 limitations) **Limitation(s):**	**Inclusion:** Age 30-70 yrs. old + known with >= 1 registered cardiovascular risk factor or disease (hypertension, diabetes mellitus, hypercholesterolaemia, personal and family history of CVD, smoking, measurements of blood pressure (BP) >= 160/90 mmHg or total cholesterol >=6.62 mmol/l) within the preceding 2 years. **Exclusion:** Too ill to participate according to their GP, OR received exclusive specialist care, OR planned to go abroad for >=6 months **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 55.8 yrs. Sex: Male: 61.0%, Female:	**CHW Activities:** Peer health educator (PHE) worked alongside a nurse practice nurse. Together they: contacted patients to visit the general practice for follow-up, performed intake sessions to evaluate patients CVD risk profile, developed treatment plan, conducted 3 risk assessments every 3 months measuring BP, weight, lipids, and blood glucose, and provided, 3 individual follow-up educational sessions based on the treatment plan prescribed. **CHW Core Roles Met:** providing culturally appropriate information and health education + Unclear (intake session performed by the PN and/or PHE to evaluate the patient's health problems, specifically the cardiovascular risk profile) **CHW Models of Care Met:** Member of care delivery team + screening & health education provider	**Blood Pressure Outcomes** **Change in SBP (mmHg)** **Baseline: mean (SD)** Intervention (n=137): 150.6 (2.2) Comparison: (n=138):150.9 (1.8) **12 Months:** Intervention (n=94): 146.8 (1.8) Comparison (n=94): 144.6 (2.02) **Change in mean difference = 2.4; 95% CI: -2.6, 12.5** **Change in DBP (mmHg)** **Baseline: mean (SD)** Intervention (n=137): 88.5 (1.2) Comparison (n=138):89.7 (0.9) **12 Months:** Intervention (n=94): 89.3 (1.1) Comparison (n=94): 89.6 (1.1) **Change in mean difference = 0.21; 95% CI: -2.6, 3.01** **Cholesterol Outcomes** **Change in total cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=137): 217.7 (3.5) Comparison (n=138):214.6 (3.5) **12 Months:**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Interpretation of Results (3) - f/u < 80% +significant differences between intervention and comparison group at baseline for smoking + the intervention was directed to general practices, therefore, some transfer of effect from the intervention to control group could take place, resulting in dilution of the effectiveness of the intervention Other: Study description did not differentiate between practice nurse and peer health educator responsibilities **Funding:** Netherlands Organization for Health Research and Development **Applicability:** For this study, mainly to the Dutch low-income population in the Netherlands at risk for CVD attending primary health care practices that use a team-based care approach including peer health educators	39.0% Race/ethnicity: Dutch: 47.0%; other: 30.0%; Turkish: 23.0% Education: <high school: 80.0% Low income: 100% Health insurance: Universal health coverage: 100% Unemployed: NR **Reported Risk Factors [Intervention Participants]:** Smoking: 53.0%	**CHW Characteristics:** CHW matched to population by: NR Payment: NR Educational background: NR Years of experience: NR Supervisor: Practice Nurse CHW performance evaluation: NR Recruitment: NR Training: NR **Other provider(s):** General Physician +Practice Nurse +GP assistant **Other provider(s) activities**: Practice nurse performed the same activities as the PHE mentioned above. The GP was the first responsible for all treatment decisions and the GP assistant completed logistical tasks **Community Partners Involved:** N/A **Comparison Group:** participants in this group continued to receive usual medical care (not specified)	Intervention (n=94): 203.8 (3.5) Comparison (n=94): 201.1 (3.9) **Change in mean difference = -0.38; p>0.05** **Change in LDL (mg/dL)** **Baseline: Mean (SD)** Intervention (n=137): 132.3 (3.5) Comparison (n=138):129.5 (3.5) **12 Months:** Intervention (n=94): 119.1 (3.5) Comparison (n=94): 119.1 (3.9) **Change in mean difference = -2.7; p>0.05** **Change in HDL (mg/dL)** **Baseline: Mean (SD)** Intervention (n=137): 48.3 (1.2) Comparison (n=138):50.7 (1.6) **12 Months:** Intervention (n=94): 50.3 (1.6) Comparison (n=94): 51.8 (1.6) **Change in mean difference = 0.8; p>0.05** **Change in Triglycerides (mg/dL)** **Baseline: Mean (SD)** Intervention (n=137): 190.4 (10.6) Comparison (n=138):174.5 (8.9) **12 Months:** Intervention (n=94): 178.0 (12.4) Comparison (n=94): 159.4 (8.0) **Change in mean difference = 2.7; p>0.05** **Diabetes Outcomes** **Change in A1c (%)** **Baseline: Mean (SD)** Intervention (n=137): 6.49 (0.12) Comparison (n=138):6.4 (0.09) **12 Months:** Intervention (n=94): 6.5 (0.11) Comparison (n=94): 6.38 (0.09) **Change in mean difference = 0.03; 95% CI: -0.16, 0.23**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
			Change in fasting blood glucose mg/dL) **Baseline: Mean (SD)** Intervention (n=137): 120.24 (3.96) Comparison (n=138): 115.6 (3.06) **12 Months:** Intervention (n=94): 115.6 (3.6) Comparison (n=94): 112.5 (3.06) **Change in mean difference = -1.62; p>0.05** **CVD Risk Score Outcomes** **Change in absolute 10-yr CVD risk (%)** **Baseline: Mean (SD)** Intervention (n=137): 25.5 (1.01) Comparison (n=138): 23.9 (1.02) **12 Months:** Intervention (n=94): 23.7 (1.1) Comparison (n=94): 21.6 (1.05) **Change in mean difference = 0.51; 95% CI: -1.16, 2.93** **BMI/Weight Outcomes** **Change in BMI (kg/m^2)** **Baseline: Mean (SD)** Intervention (n=137): 30.2 (0.51) Comparison (n=138): 30.7 (0.5) **12 Months:** Intervention (n=94): 29.6 (0.49) Comparison (n=94): 30.3 (0.5) **Change in mean difference = -0.22; 95% CI: -0.85, 0.41** **Additional Outcomes:** N/A **Summary**: There were non-significant reductions in TC, LDL, HDL, FBG and BMI. However, SBP, DBP, TG and HbA1c were in the unfavorable direction for participants receiving the PHE/PN intervention compared to usual care participants.

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Author(s): Hayashi et al. 2010 **Location:** California **Setting:** 4 health centers in Los Angeles and San Diego counties **Scale:** Study included 4 health centers staffed with two CHWs who were supervised by a clinical staff member. 1,332 Hispanic women were screened at the four sites. On enrollment, women who met inclusion criteria were randomized to the intervention group (EIG, n=552) or the control group (UCG, n=541). **Design:** Randomized controlled trial **Intervention duration:** 12 months **Quality of Execution:** Good (1 limitation) **Limitation(s):** Interpretation of Results_-f/u <80% **Funding:** Centers for Disease Control and Prevention **Applicability:** For this study, mainly to low income, uninsured female	**Inclusion:** Female + Hispanic + 40 to 64 years of age + low income (less than 200% of the federal poverty level) + under-insured or uninsured for their health care coverage + SBP ≥120mmHg or DPB ≥80mmHg or currently taking medications to lower blood pressure + either total cholesterol ≥ 200 mg/dL or taking medications to lower cholesterol. **Exclusion:** BP > 180/110mmHg OR cholesterol >400mg/dL OR pregnant OR had past or current CVD events/conditions **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 51.8 yrs. Sex: Female: 100% Race/ethnicity: Hispanic: 100% Education:<H.S.: 73.2% Low income: 100% No health insurance: 100% Unemployed: NR **Reported Risk Factors [Intervention Participants]:**	**CHW Activities:** Participants were provided with three bilingual one-on-one face-to-face counseling sessions at approximately 1, 2, and 6 months after enrollment, each taking place at the clinic for about 30 minutes centered on the New Leaf curriculum. CHWs helped with recruiting, enrolling, conducting counseling, and following clients for the Heart of the Family intervention. Counseling included collaborative goal setting, strategies to overcome barriers, self-efficacy, self-monitoring, reinforcement, readiness for change, and social support. **CHW Core Roles Met:** Providing culturally appropriate information and health education + ensuring people get services they need + providing informal counseling and social support + building individual and community capacity **CHW Models of Care Met:** Screening and health education provider **+** outreach/enrollment/information agent **CHW Characteristics:** CHW matched to population by: Location + language Payment: NR Educational background: Study stated that CHWs were relatively well educated	**Blood Pressure Outcomes** **Proportion with BP at goal (%)** **Baseline:** Intervention (n=433): 84.1% Comparison (n=436): 81.7% **12 Months; BP < 140/90 mmHg:** Intervention (n=433): 93.2% Comparison (n=436): 87.7% **Absolute pct pt change = 3.0; 95% CI: -0.9 to 6.9** **Change in SBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=433): 125.1 (NR) Comparison (n=436): 124.7 (NR) **12 Months:** Intervention (n=433): 119.2 (NR) Comparison (n=436): 121.0 (NR) **Change in mean difference = -2.2; p=0.038** **Change in DBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=433): 76.6 (NR) Comparison (n=436): 76.7 (NR) **12 Months:** Intervention (n=433): 72.8 (NR) Comparison (n=436): 74.2 (NR) **Change in mean difference = -1.3; p=0.103** **Cholesterol Outcomes** **Proportion with total cholesterol at goal (%)** **Baseline:** Intervention (n=433): 87.4% Comparison (n=436): 86.6% **12 Months; TC < 240 mg/dL:** Intervention (n=433): 85.0% Comparison (n=436): 83.8% **Absolute pct pt change = 0.40; p=0.895**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Hispanics with less than a high school education receiving one-on-one bilingual counseling with CHWs at the local health center and additional help from a registered nurse in the management of CVD risk factors.	Diabetes: 19.2% Smoking: 3.9% Obese (BMI>30): 31.6 Alcohol/substance abuse: NR	Years of experience: NR Supervisor: Registered nurse CHW performance evaluation: State project staff visited each study site twice during the study period. (validation of the study protocol, counseling sessions) Recruitment: NR Training: 2.5 day hands-on training on conducting the Heart of the Family RCT. Also included burden of CVD in California and Cardiovascular health with didactic lecture and interactive discussion. **Other provider(s):** N/A **Other provider(s) activities**: N/A **Community Partners Involved:** NR **Comparison Group:** Participants in this group did not receive the intervention but were provided with usual care for elevated blood pressure and cholesterol. Usual care generally consisted of educational pamphlets distributed to participants covering topics relating to high blood pressure and high cholesterol.	**Change in total cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=433):198.0 (NR) Comparison (n=436):198.2 (NR) **12 Months:** Intervention (n=433):200.3 (NR) Comparison (n=436):199.3 (NR) **Change in mean difference = 0.80; p=0.91** **Change in LDL-C (mg/dL)** **Baseline: Mean (SD)** Intervention (n=433):132.5 (NR) Comparison (n=436):129.5 (NR) **12 Month:** Intervention (n=433):119.1 (NR) Comparison (n=436):119.1 (NR) **Change in mean difference = -2.7; p>0.05** **Change in HDL-C (mg/dL)** **Baseline: Mean (SD)** Intervention (n=433):45.1 (NR) Comparison (n=436):44.6 (NR) **12 Months:** Intervention (n=433):47.7 (NR) Comparison (n=436):46.6 (NR) **Change in mean difference = 0.6; p=0.285** **<u>CVD Risk Score Outcomes</u>** **Change in Framingham Risk Score (FRS)** Intervention (n=433): 0.07 (NR) Comparison (n=436): 0.07 (NR) **12 Months:** Intervention (n=433):0.06 (NR) Comparison (n=436): 0.07 (NR) **Change in mean difference = -0.004; p=0.051** **Additional Outcomes (see separate table):** physical activity, nutrition, smoking **Summary:** There were significant reductions in both SBP and DBP as well as an increase in the proportion of participants with BP at goal. An increase in the proportion of participants with total cholesterol at

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
			goal was observed. The remaining cholesterol outcomes were mixed with an increase in mean total cholesterol but favorable results for mean LDL and mean HDL (both insignificant). A decrease in CVD risk was also observed and improvements were found in physical activity, nutrition, and smoking.
Author(s): Hill et al. 2003 **Location:** Maryland **Setting(s):** Participant's home + Outpatient General Clinical Research Center (Johns Hopkins) **Scale:** Total of 821 participants screened for eligibility, 309 met inclusion criteria and entered the study (n=157 intervention group, n=152 comparison group) **Design:** Randomized controlled trial **Intervention duration:** 36 months **Quality of Execution:** Good (1 limitation) **Limitation(s):** Description – recruitment methods and description of setting not adequately described **Funding:** National Institute of Nursing Research **Applicability:**	**Inclusion:** African American + male + 18-54 yrs. old + SBP ≥140 mmHg OR DBP ≥90 mmHg OR taking antihypertensive medications + resident within Johns Hopkins catchment area **Exclusion:** Renal dialysis + acute terminal illness + serious mental illness + participating in another HTN study **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 41.0 yrs. Sex: Male: 100% Race/ethnicity: Black/AA: 100.0% Education: <H.S.:39; H.S. grad: 41.0%; some college: 20.0% Low income: 88% (<$20,000) No health insurance: 54.0% Unemployed: 40.0% Previously incarcerated:	**CHW Activities:** Provided one-on-one face-to-face sessions with the participant at their home at least annually. CHW provided referrals to social services including job training, and assisted with locating housing. **CHW Core Roles Met:** Ensuring people get services they need + providing informal counseling and support + providing direct services and meeting basic needs. **CHW Models of Care Met:** Member of care delivery team + outreach/enrollment/information agent **CHW Characteristics:** CHW matched to population by: race/ethnicity Payment: NR Educational background: NR Years of experience: NR Supervisor: unclear whether nurse practitioner (NP) or physician CHW performance evaluation: NR Recruitment: NR Training: NR **Other provider(s):** physician +	**Blood Pressure Outcomes** **Proportion with BP at goal (%)** **Baseline:** Intervention (n=157): 17.0% Comparison (n=152): 21.0% **36 Months; BP < 140/90 mmHg:** Intervention (n=157): 35.0% Comparison (n=106): 21.6% **Absolute pct pt change = 17.4; 95% CI: 7.5 to 27.3** **Change in SBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=157): 146.8 (19.4) Comparison (n=152): 147.5 (20.9) **36 Months:** Intervention (n=125): 139.3 (22.2) Comparison (n=106): 150.9 (25.0) **Change in mean difference = -10.9; p=0.001** **Change in DBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=157): 99.4 (14.5) Comparison (n=152): 98.5 (14.9) **36 Months:** Intervention (n=125): 89.3 (15.8) Comparison (n=106): 94.8 (18.6) **Change in mean difference = -6.4; p=0.005** **Cholesterol Outcomes** **Proportion with total cholesterol at goal (%)** **Baseline:** Intervention (n=125): 68.0%

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
For this study, mainly to low-income African American males with high blood pressure or currently taking antihypertensive medication who were previously incarcerated and receiving one-on-one follow up with CHWs at their home and additional care from a nurse practitioner.	64.0% **Reported Risk Factors [Intervention Participants]:** High BP: 100% Diabetes: 7.0% Smoking: 84.0% Obese (BMI>30): 26.0% Alcohol/substance abuse: 40.0%	nurse practitioner (NP) **Other provider(s) activities**: NP provided free medication for BP care and made changes to medications based on JNC-VI guidelines. Physician was available for consultation with NP and participated in case discussions regarding BP management and other health conditions as needed. **Community Partners Involved:** N/A **Comparison Group:** Participants in the comparison group were referred to sources of BP care in the community. They received calls every 6 months, annual evaluation, appropriate referrals for health conditions and social needs and attention from study staff.	Comparison (n=106): 70.0% **36 Months; TC < 200 mg/dL:** Intervention (n=125): 66.0% Comparison (n=106): 61.0% **Absolute pct pt change = 7.0 (p-value not reported)** **Proportion with HDL-C at goal (%)** **Baseline:** Intervention (n=125): 72.0% Comparison (n=106): 64.0% **36 Months; HDL > 35 mg/dL:** Intervention (n=125): 84.0% Comparison (n=106): 82.0% **Absolute pct pt change = -6.0 (p-value not reported)** **Additional Outcomes (see separate table):** smoking + nutrition + utilization of care **Summary:** There were significant reductions in both systolic and diastolic BP as well as a significant increase in the proportion of participants with BP controlled. An increase in the proportion of participants with total cholesterol at goal was observed however, this was not observed for HDL at goal. There were reductions in current smoking as well as salt intake.
Author(s): Hill et al. 1999 **Location:** Maryland **Setting(s):** participant's home + hospital outpatient general clinical research center **Scale:** Study was conducted at 1 hospital outpatient research center and included 1 CHW. Of the 1,1391 potentially eligible	**Inclusion:** Black or African American male resident within Johns Hopkins Hospital catchment area + between 18-49 yrs. old + SBP ≥140 or DBP ≥90 mmHg or BP < 140/90 but currently taking high blood pressure medications on two occasions + able to give their phone number and address **Exclusion:** Acute or	**CHW Activities:** CHW provided individualized counseling, monthly telephone calls, and a home visit. CHW provided drop-in BP checks, referrals to job training and substance abuse rehabilitative programs, education on high blood pressure and the importance of adhering to treatment, and referrals to a physician if necessary **CHW Core Roles Met:** Ensuring that people get services they	**Blood Pressure Outcomes** **Change in SBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=102): 153.0 (16.0) Comparison (n=101): 151.0 (18.0) **12 Months:** Intervention (n=78): 152.0 (19.0) Comparison (n=77): 147.0 (21.0) **Change in mean difference = 3.0; p>0.05** **Change in DBP (mmHg)** **Baseline: Mean (SD)**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
men who responded to the study invitation, 103 were randomized to CHW intervention and 101 to the comparison group **Design:** Randomized controlled trial **Intervention duration:** 12 months **Quality of Execution:** Fair (3 limitations) **Limitation(s):** Description - Intervention not adequately described and no reference of a design paper Interpretation of Results: stratified demographic characteristics comparing intervention and comparison participants not provided + recruitment rate <20% **Funding:** NINR + NIH + JM Foundation + Hoechst Marion Roussel and WA Baum Co. + Johns Hopkins **Applicability:** For this study, mainly to African American males with high blood pressure and no health insurance, who have previously been incarcerated, and are receiving individualized counseling and follow-up	terminal condition precluding participation **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 39 yrs. Sex: Male: 100% Race/ethnicity: Black/AA: 100% Education: NR Low income: NR No health insurance: 61.0% Unemployed: NR Previously incarcerated: 58.0% **Reported Risk Factors [Intervention Participants]:** High blood pressure: 100%	need + providing direct services and meeting basic needs + building individual and community capacity **CHW Models of Care Met:** Member of care delivery team + outreach/enrollment/information agent. **CHW Characteristics:** CHW matched to population by: race/ethnicity Payment: NR Educational background: NR Years of experience: NR Supervisor: unclear whether supervised by nurse CHW performance evaluation: NR Recruitment: NR Training: NR **Other provider(s):** nurse **Other provider(s) activities:** Nurse and community health worker collaborated together as a team. Nurse provided the same services as the CHW described above in “CHW Activities” **Community Partners Involved:** N/A **Comparison Group:** Participants in the comparison group received education on high blood pressure, the importance of remaining in care and adhering to treatment,	Intervention (n=102): 98.0 (10.0) Comparison (n=101): 98.0 (11.0) **12 Months:** Intervention (n=78): 94.0 (11.0) Comparison (n=77): 92.0 (14.0) **Change in mean difference = 2.0; p>0.05** **Additional Outcomes:** N/A **Summary:** participants in the intervention group saw non-significant increases in both SBP and DBP compared to participants in the comparison group at 12 months.

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
for hypertension management by a nurse-CHW team.		referral to a physician if necessary, and a wallet card on which to record BP. All participants (intervention and comparison) received $10 for completing phase II screening and another $25 at study completion	
Author(s): Hovell et al. 1984 **Location:** California **Setting(s):** HMO (not specified) **Scale:** Study was conducted at 1 HMO (not specified) where a total of 10 voluntary subjects were matched with 10 control subjects based on initial BP **Design:** Before-After with comparison group **Intervention duration:** NR **Quality of Execution:** Fair (4 limitations) **Limitation(s):** Description - study population and setting not adequately described. Intervention duration not specified Sampling - inclusion/exclusion criteria not clearly specified and recruitment not clearly	**Inclusion:** BP ≥140/90 mmHg + suspected poor adherence **Exclusion:** NR **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 52.5 yrs. Sex: Male: 70.0%; Female: 30.0% Race/ethnicity: White: 80.0%; Black/AA: 10.0%; Asian: 10.0% Education: NR Low income: NR Private health insurance: 100% Unemployed: NR **Reported Risk Factors [Intervention Participants]:** High blood pressure: 100%	**CHW Activities:** Lay counselors met with participants via one-on-one face-to-face sessions twice a month for 15 to 20 minutes. During each visit, medications were taken and counted, body weight and BP were measured and feedback was provided. The lay counselor became familiar with patient-specific history such as family members, work schedules, and general interests. Lay counselors also provided adherence counseling and taught participants specific skills to help participants adhere to their medication. **CHW Core Roles Met:** Providing informal counseling and support + providing direct services and meeting basic needs + building individual and community capacity **CHW Models of Care Met:** Screening and health education provider **CHW Characteristics:** CHW matched to population by: unmatched Payment: NR	**Blood Pressure Outcomes** **Change in SBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=10): 146.8 (13.96) Comparison (n=10): 146.3 (11.3) **Follow-up NR:** Intervention (n=10): 136.9 (14.9) Comparison (n=10): 140.8 (11.99) **Change in mean difference = -4.4; p>0.05** **Change in DBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=10): 95.0 (4.5) Comparison (n=10): 94.9 (7.6) **Follow-up NR:** Intervention (n=10): 88.0 (5.6) Comparison (n=10): 90.9 (10.9) **Change in mean difference = -3.0; p>0.05** **Weight/BMI Outcomes** **Change in weight (lbs.)** **Baseline: Mean (SD)** Intervention (n=10): 187.3 (20.3) Comparison (n=10): 168.5 (32.0) **Follow-up NR:** Intervention (n=10): 189.7 (35.2) Comparison (n=10): 167.9 (30.6) **Change in mean difference = 3.0 (p-value not reported)** **Additional Outcomes (see separate table):** medication adherence**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
explained Data analysis - analytic methods not provided Interpretation of Results – scale and complete baseline characteristics with statistical significance were not provided **Funding:** NIH, National Heart, Lung, and Blood Institute **Applicability:** For this study, mainly to white males with high blood pressure receiving one-on-one sessions twice a month with lay counselors to help improve medication adherence		Educational background: H.S. Grad: 100% Years of experience: unclear; likely no prior experience Supervisor: nurse CHW performance evaluation: NR Recruitment: NR Training: Lay counselors attended three, two-hour training sessions delivered by a nurse and psychologist. They were instructed in blood pressure measurement, adherence measurement, interviewing, and counseling. **Other provider(s):** N/A **Other provider(s) activities:** N/A **Community Partners Involved:** N/A **Comparison Group:** Participants in the comparison group were seen by a nurse at regular intervals during self-initiated visits, at a high-blood pressure check station. Comparison group was a matched group of ten hypertensive patients thought to be compliant and presumed to represent the usual response to medical treatment for hypertension.	**Summary:** non-significant reductions in SBP and DBP were observed in participants who received the lay counselor intervention compared to the comparison group. However there was an increase in weight in the intervention group. There was also an increase in medication adherence among intervention participants.
Author(s): Kaczorowski et al. 2011	**Inclusion:** anyone visiting a participating pharmacy	**CHW Activities:** Intervention consisted of 3-hour morning BP	**Morbidity Outcomes** **Change in hospital admissions for MI**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Location: Canada (Ontario) **Setting(s):** Community pharmacies **Scale:** A total of 39 communities were included in the study (20 intervention communities and 19 control communities) including 557 peer volunteers. A total of 15,899 unique participants were analyzed with 27,358 cardiovascular assessments **Design:** Group randomized controlled trial **Intervention duration:** 10 weeks **Quality of Execution:** Good (1 limitation) **Limitation(s):** Interpretation of Results - intervention duration < 2 months **Funding:** Canadian Stroke Network + Ontario Ministry of Health Promotion **Applicability:** For this study, mainly to older adults > 75 yrs. old with access to universal health coverage and receiving CVD risk factor assessments by a peer	could participate however study specifically targeted those ≥65 yrs. old **Exclusion:** NR **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 74.8 yrs. Sex: Male: 42.9%; Female: 57.1% Race/ethnicity: NR Education: NR Low income: 18.6% Health insurance: 100% universal health coverage Unemployed: NR **Reported Risk Factors [Intervention Participants]:** Diabetes: 21.2% History of CHF: 12.5%	and CVD risk-factor assessment sessions that was held in local pharmacies once a week over 10 weeks. Volunteer peer health educators assisted participants in measuring BP and to record BP and other CVD risk information on a standardized risk profile form. With permission from the participant, a summary CVD risk profile was sent to the participant's family physician and regular pharmacist. Each participant received a copy of the form, along with risk factor specific cardiovascular health education materials from the Heart and Stroke Foundation of Canada, and a list of local resources **CHW Core Roles Met:** Bridging/cultural mediation between community and healthcare system + providing culturally appropriate information and health education + ensuring people get services they need + providing direct services and meeting basic needs **CHW Models of Care Met:** Member of care delivery team + screening and health education provider + outreach/enrollment/information agent **CHW Characteristics:** CHW matched to population by: NR Payment: CHWs were volunteers	**(admissions/1000/year)** **Baseline: Mean (SD); 12m prior** Intervention (n=67,874): 10.24 (NR) Comparison (n=72,768): 10.3 (NR) **12 Months after intervention** Intervention (n=69,942): 9.5 (NR) Comparison (n=75,499): 10.81 (NR) **Change in mean difference = -1.3; p<0.01** **Change in hospital admissions for CHF (admissions/1000/year)** **Baseline: Mean (SD); 12m prior** Intervention (n=67,874): 11.19 (NR) Comparison (n=72,768): 11.1 (NR) **12 Months after intervention** Intervention (n=69,942): 10.5 (NR) Comparison (n=75,499): 12.2 (NR) **Change in mean difference = -1.8; p=0.03** **Change in hospital admissions due to stroke (admissions/1000/year)** **Baseline: Mean (SD); 12m prior** Intervention (n=67,874): 8.71 (NR) Comparison (n=72,768): 8.0 (NR) **12 Months after intervention** Intervention (n=69,942): 7.9 (NR) Comparison (n=75,499): 7.10 (NR) **Change in mean difference = 0.04; p=0.89** **Mortality Outcomes** **Change in in-hospital deaths from CVD (deaths/1000/year)** **Baseline: Mean (SD); 12m prior** Intervention (n=67,874): 4.35 (NR) Comparison (n=72,768): 4.5 (NR) **12 Months after intervention** Intervention (n=69,942): 3.9 (NR) Comparison (n=75,499): 4.6 (NR) **Change in mean difference = -0.7; p=0.06** **Additional Outcomes:** N/A

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
health educator at local pharmacies.		Educational background: NR Years of experience: NR Supervisor: NR CHW performance evaluation: NR Recruitment: CHWs recruited via interpersonal contact + media ad + existing volunteer organization Training: volunteers were trained according to a standardized curriculum developed by a public health nurse **Other provider(s):** nurse practitioner + pharmacist + physician **Other provider(s) activities:** A community health nurse was on-call to assess participants if their BP was very high, based on a standardized protocol. Pharmacists were involved as needed consulting with participants about their medication (for example, medication adherence, potential drug interactions and side effects) or related concerns. Family physicians were provided with feedback reports 6 months after intervention. **Community Partners Involved:** local community centers + district stroke center + local hospital + senior centers + YMCA + community care access center + home care organizations + meals-on-wheels	**Summary:** Significant reductions in in-hospital admissions for heart attack and congestive heart failure were observed for communities receiving CVD risk factor assessment sessions delivered by volunteer peer health educators at local pharmacies. A non-significant reduction in deaths related to CVD was also observed. However, there was a slight increase in hospital admissions related to stroke (non-significant).

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
		Comparison Group: Control communities did not receive the pharmacy intervention nor were told that an intervention was being implemented in other communities. Participants did receive the usual health promotion and healthcare services available to all Ontarians under its publicly financed universal health insurance program.	
Author(s): Krantz et al. 2012 **Location:** Colorado **Setting(s):** community centers + shelters + migrant camps + local businesses + grocery stores + federally qualified health centers (FQHC) + hospitals **Scale:** Study included a total of 34 Colorado counties including 12 public health agencies, 4 federally qualified community health centers and 4 rural hospitals. A total of 22 CHWs were included in the project and a total of 7,381 patients were screened for CHD risk factors. **Design:** Prospective cohort **Intervention duration:** Range: 3-12 months (mean: 8.3 months)	**Inclusion:** Participants at risk for CHD defined as any individual with an uncontrolled risk factor per national guidelines or having a Framingham risk score of 10% or greater **Exclusion:** NR **Reported Baseline Demographics [Intervention Participants]:** Age: 18-34 yrs.: 8.0%; 35-49 yrs.:25.2%; 50-64 yrs.: 45.3%; 65-98 yrs.: 21.5% Sex: Male: 49.1%; Female: 50.9% Race/ethnicity: White: 64.2%; Hispanic: 27.5%; Unknown: 8.3% Education: <H.S.:16.8%; H.S. grad: 30.8%; some college:26.1%; college grad: 26.4% Low income: NR No health insurance:	**CHW Activities:** CHWs performed health screening activities for CVD risk factors, assessed care access, and obtained health history via one-one-one face-to-face interactions. CHWs used motivational interviewing to provide action plans to promote healthy behaviors. At-risk individuals received medical referrals and information about available resources. CHWs conducted f/u phone calls to check on status of referrals. CHWs had access to an electronic outreach screening and referral system that guided them through study activities and included decision-support on when to provide medical referrals and creating action plans. **CHW Core Roles Met:** Bridging/cultural mediation between communities and healthcare system + ensuring people get the services they need + providing culturally appropriate information and health education + providing direct services and meeting basic needs	**Blood Pressure Outcomes** **Change in SBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=677):132.7 (18.4) **8.3 Months: (all participants retested)** Intervention (n=652): NR **Change in mean difference = -3.8; p<0.001** **Change in DBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=676): 83.6 (11.1) **8.3 Months: (all participants retested)** Intervention (n=649): NR **Change in mean difference = -2.3; p<0.001** **Cholesterol Outcomes** **Change in total cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=NR): NR **8.3 Months: (all participants retested)** Intervention (n=679): NR **Change in mean difference = -7.5; p<0.001** **Change in LDL-cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=606): 131.5 (36.1) **8.3 Months: (all participants retested)** Intervention (n=561): NR

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Quality of Execution: Fair (2 limitations) **Limitation(s):** Interpretation of results - follow-up < 80% + possible self-selection bias as the retest group tended to be less healthy than the no retest group. **Funding:** Colorado Department of Public Health and Environment + Caring for Colorado Health Foundation + Anschutz Family Foundation **Applicability:** For this study, mainly to white persons aged 50-64 yrs. of age with high BP, high cholesterol, or diabetes, and obese, receiving one-on-one screening for CVD risk factors from a CHW and follow-up phone calls to ensure participants received referral services.	27.4% Unemployed: 18.9% **Reported Risk Factors [Intervention Participants]:** High BP: 35.7% High cholesterol: 43.4% Diabetes: 11.7% Smoker: 11.2% CHD: 7.6% Obese: 35.0%	**CHW Models of Care Met:** Screening and other health education provider + outreach/enrollment/information agent **CHW Characteristics:** CHW matched to population by: Location Payment: unclear whether paid or volunteer Educational background: NR Years of experience: NR Supervisor: NR CHW performance evaluation: NR Recruitment: NR Training: CHWs were trained using standard curriculum via on-the-job training, institutional training, and through a CHW certificate program. CHWs received additional CHW specific content **Other provider(s):** N/A **Other provider(s) activities**: N/A **Community Partners Involved:** N/A	**Change in mean difference = -7.4; p<0.001** **Change in HDL-cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=674): 44.3 (17.2) **8.3 Months: (all participants retested)** Intervention (n=653): NR **Change in mean difference = 1.9; p<0.001** **Weight/BMI Outcomes** **Change in BMI (kg/m^2)** **Baseline: Mean (SD)** Intervention (n=NR): NR **8.3 Months: (all participants retested)** Intervention (n=626): NR **Change in mean difference = -0.1; p=0.12** **Change in Weight (lbs.)** **Baseline: Mean (SD)** Intervention (n=631): NR **8.3 Months: (all participants retested)** Intervention (n=631): NR **Change in mean difference = -1.1; p=0.01** **CVD Risk Score Outcomes** **Change in Framingham Risk Score** **Baseline: Mean (SD)** Intervention (n=698): 12.3 (11.3) **8.3 Months (all participants retested)** Intervention (n=691): NR **Change in mean difference = -0.8; p<0.001** **Additional Outcomes:** N/A **Summary:** Significant reductions for the intervention group were observed for SBP, DBP, total cholesterol, LDL, BMI, and weight from baseline. There was a significant increase in HDL. Further, there was a significant decrease in CVD risk in intervention participants from baseline

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Author(s): Morisky et al. 2002 **Location:** California **Setting(s):** participant's home + 1 private HMO clinic + 1 hospital-based medical center **Scale:** Study included 1 private HMO clinic and 3 hospital-based medical clinics. A total of 1,367 participants agreed to participate of which, 1,119 attended one of the 3 clinics at the hospital and 248 attending the private HMO **Design:** Randomized controlled trial **Intervention duration:** 12 months **Quality of Execution:** Fair (2 limitations) **Limitation(s):** Sampling - sampling frame not adequately described Interpretation of Results - intervention and comparison groups not comparable at baseline **Funding:** NIH, National Heart, Lung, and Blood Institute	**Inclusion:** diagnosed with hypertension + Black or Hispanic + low-income from inner city **Exclusion:** NR **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 53.5 yrs. Sex: Male: 40.8% Female:59.2% Race/ethnicity: White:0.9%; Hispanic: 20.6% Black/AA: 76.5%; Asian: 1.1% Education: < H.S: 48.5%; H.S. grad: 40.3%; college grad: 9.9%; post-grad: 0.9% Low income: 98.0% Medicaid: 54.0% No health insurance: 30.0% Unemployed: NR **Reported Risk Factors [Intervention Participants]:** High BP: 100% Diabetes: 17.0% Current smoker: 11.0% Heart condition: 21.0% Stroke: 11.0% Renal dysfunction: 12.0%	**ARM 1: INDIVIDUAL PATIENT COUNSELING** **CHW Activities:** Participants met with CHW after every medical clinic visit for one-on-one face-to-face counseling sessions lasting 5 to 10 minutes designed to reinforce medication taking and appointment keeping behaviors. CHW ensured that participant understood treatment, assisted with any problems with the treatment regimen, taught environmental cues to participants to help remember to take medications, and identified sources of family/friend support to help adhere to medications. **CHW Core Roles Met (Arm1):** Bridging/cultural mediation between community and healthcare system + providing culturally appropriate information and health education + providing informal counseling and support + building individual and community capacity **CHW Models of Care Met (Arm 1):** Screening and health education provider + Outreach/enrollment/information agent **ARM 2: HOME VISITS WITH GROUP SESSIONS** **CHW Activities:** Participants assigned to this intervention arm received home visits from the CHW who reinforced the treatment prescribed by the	**ARM 1: INDIVIDUAL PATIENT COUNSELING** **Blood Pressure Outcomes** **Proportion with BP at goal** The proportion of intervention participants with BP at goal increased by 46 pct pts from baseline to 12 months. The comparison group demonstrated non-significant increases in the proportion of participants with their BP at goal. Specific outcomes from the comparison group were not reported **ARM 2: HOME VISITS WITH GROUP SESSIONS** **Blood Pressure Outcomes** **Proportion with BP at goal** Participants assigned to this group demonstrated non-significant increases in the proportion of participants with their BP at goal from baseline to 12 months. The comparison group also demonstrated a non-significant increase in the proportion of participants with BP at goal (specific results not reported). **Additional Outcomes:** N/A **Summary:** Participants receiving individual counseling with a CHW demonstrated a 46 pct pt increase in the proportion of participants with their BP at goal at 12 months. Participants receiving home visits by the CHW along with optional group discussion sessions demonstrated a non-significant increase in the proportion of participants with their BP at goal.

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Applicability: For this study, mainly to low-income Medicaid recipients or, those with no health insurance, diagnosed with high blood pressure receiving either individual counseling sessions with a CHW after regular medical appointments, OR receiving home visits by a CHW with optional group discussion sessions.		participant's primary care provider and corrected any misconceptions. Home visit frequency varied based on participant need. CHW involved family members in the management of lifestyle recommendations and medication-taking behaviors. Participants also had the opportunity to participate in voluntary group discussion sessions with peers **CHW Core Roles Met (Arm2):** Bridging/cultural mediation between community and healthcare system + providing culturally appropriate information and health education + providing informal counseling and social support + building individual and community capacity **CHW Models of Care Met (Arm 2):** Screening and other health education provider + Outreach/enrollment/information agent **CHW Characteristics (BOTH ARMS):** CHW matched to population by: Language Payment: NR Educational background: NR Years of experience: NR Supervisor: NR CHW performance evaluation: NR Recruitment: NR	

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
		Training: CHWs attended one-month training program for developing interview skills. They were also trained according to AHA guidelines and certified for BP measurement and monitoring **Other provider(s) (BOTH ARMS):** N/A **Other provider(s) activities (BOTH ARMS):** N/A **Community Partners Involved (BOTH ARMS):** N/A **Comparison Group:** Participants in the comparison group received standard clinic care for hypertension including medications, dietary counseling, and non-pharmacologic interventions (e.g., smoking cessation, weight reduction). Comparison group participants did not have any interactions with the CHW	
Author(s): Plescia et al. 2008 **Location:** North Carolina **Setting:** Participant's home via door to door outreach + neighborhood community centers **Scale:** Study included 14 neighborhoods in Charlotte, NC which included 19,670 residents. Twenty-six lay health advisors (LHA) were	**Inclusion:** Any REACH household member aged 18 yrs. or older (geographic eligibility). Then adults randomly selected from 2 categories: 1) women aged 40 to 64 years, 1 per household 2) men 18 years and older and women aged 18 to 39 years or 65 years and older, 1 or more women per household. **Exclusion:** NR	**CHW Activities:** Lay health advisors (LHA) provided outreach, peer education, referral, and advocacy for their neighbors. They conducted door-to-door visits and coordinated group educational opportunities and workshops in the community that included walking groups, diabetes support groups, and health house parties. The diabetes support groups were facilitated in neighborhood centers by LHAs and the REACH nurse to discuss diabetes control. LHAs organized	**No health outcomes were reported** **Additional Outcomes (see separate table):** physical activity, nutrition, and smoking **Summary:** Statistically significant declines in physical inactivity and smoking among women and in physical inactivity among middle-aged adults. The decreases in physical inactivity and increases in fruit and vegetable consumption were significantly greater in the northwest corridor (95% AA) than in the statewide African American sample.

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
trained during the program **Design:** Other design with concurrent comparison **Intervention duration:** 5 years **Quality of Execution:** Fair (2 limitations) **Limitation(s):** Interpretation of Results_ - potential confounders not controlled for as other external factors or events may have been responsible for these improvements in health behaviors + significant differences between intervention and comparison group at baseline for age **Funding:** Centers for Disease Control and Prevention **Applicability:** For this study, mainly to low-income African Americans who tended to be female receiving one-on-one face-to-face sessions and group sessions with a CHW (or lay health worker) and additional care from a registered nurse, registered dietitian, smoking cessation health educator and fitness specialist.	**Reported Baseline Demographics [Intervention Participants]:** Age (mean): 18-34 (20.2%), 35-44 (17.3%), 45-54 (19.6%), 55-64 (16.2%), >=65 (26.0%) Sex: Male: 36.6%; Female: 63.4% Race/ethnicity: Black/AA: 95% Education: < H.S.:22.9%; H.S. grad: 37.1%; some college:23.7%; college graduate (or more): 16.0% Low income: 49.5% (<$25,000) Health insurance: NR Unemployed: NR **Reported Risk Factors [Intervention Participants]:** Risk factors were not reported	and recruited neighborhood residents to walk in groups at least 3 days per week **CHW Core Roles Met:** providing culturally appropriate information and health education + ensuring that people get services they need + providing informal counseling and social support + advocating for individual and community needs **CHW Models of Care Met:** Screening and health education provider + outreach /enrollment/information agent + community organizer **CHW Characteristics:** CHW matched to population by: race/ethnicity + location Payment: LHAs paid hourly ($12.00/hr for a max of 10 hours per week) Educational background: NR Years of experience: NR Supervisor: overseen by registered dietitian, registered nurse, smoking cessation health educator, fitness instructor CHW performance evaluation: Unclear, study stated monthly meetings to discuss best practices and changes in the community Recruitment: Leaders of neighborhood associations nominated candidates	

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
		Training: LHAs received 80 hour series of classes and workshops (including communication techniques, behavior change, behavior change theory, social determinants of health, and advocacy) **Other provider(s):** N/A **Other provider(s) activities**: N/A **Community Partners Involved:** local health department + community-based substance abuse program + health system + other human service providers **Comparison Group:** Statewide comparison using BRFSS (2001-2005) data (Did not receive intervention)	
Author(s): Rorie et al. 2011 **Location:** Massachusetts **Setting(s):** public housing developments + mobile health van **Scale:** Study took place within 4 resident housing developments (2 intervention and 2 control) covering a population of 3,114 ultimately including 100 intervention and 47 control participants. A total of 12 resident housing advisors are trained every year	**Inclusion:** For resident housing community: presence or absence of resident housing advisors + presence of community health center within 1 mile + availability of adequate parking for the mobile health van; For individual participants: resident of the public housing community + >18 yrs. of age **Exclusion:** NR **Reported Baseline Demographics [Intervention Participants]:** **ARM 1 – SCREENING**	**ARM 1 – SCREENING INTERVENTION** **CHW Activities:** Resident housing advisors and peer leaders via one-to-one conversations, encouraged residents to use the mobile health screening services to address concerns regarding screening. One-to-one conversations took place in various settings (e.g., in management office, at the tenant task force meetings, in the hallways, in parking lots). More than 3,000 flyers were distributed door-to-door to notify the 1,715 residents of screening dates and times and to provide specific health information.	**Screening Outcomes** **Proportion screened for CVD Risk Factors (%)** **Baseline:** Intervention: N/A Comparison: N/A **F/U - unclear** Intervention (n=100): 6.0% Comparison (n=47): 3.0% **Absolute pct pt change = 3.0; (RR: 1.74; 95% CI: 1.24 to 2.44)** **Additional Outcomes:** N/A **Summary:** There were significant increases in the proportion of persons screened for CVD risk factors when receiving outreach from resident housing advisors.

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
Design: other design with concurrent comparison **Intervention duration:** unclear **Quality of Execution:** Fair (3 limitations) **Limitation(s):** Interpretation of Results - low recruitment (5.83%) + f/u < 80% + only 2 follow-up values given for the second intervention arm (no baseline values given) **Funding:** Centers for Disease Control and Prevention **Applicability:** For this study, mainly to residents of a public housing community receiving outreach for screening from resident housing advisors offering CVD risk factor screenings via a mobile public health van program	**INTERVENTION** Age (mean): NR Sex: Male:28%; Female: 72.0% Race/ethnicity: white: 19.0%; Hispanic: 39.0%; Black/AA: 29.0%; Other: 13.0% Education: NR Low income: 100% Health insurance: NR Unemployed: NR **ARM 2 – MOBILE PUBLIC HEALTH VAN** Age (mean): 44.0 yrs. Sex: Male:39.5; Female: 60.5% Race/ethnicity: white: 10.2%; Hispanic: 57.2%; Black/AA: 26.5%; Other: 5.4% Education: <H.S.: 44.2%; H.S. grad: 29.3%; some college: 26.5% Low income: 100% Medicaid: 59.9% Uninsured: 27.2% Unemployed: NR **Reported Risk Factors [Intervention Participants]:** Risk factors were not	**CHW Core Roles Met:** Bridging/cultural mediation between community and healthcare system + providing culturally appropriate information and health education + providing informal counseling and social support **CHW Models of Care Met:** Screening and health education provider + outreach/enrollment/information agent **ARM 2: MOBILE PUBLIC HEALTH VAN** **CHW Activities**: The mobile public health van is a medical mobile unit that has provided residents of Boston's neighborhoods with free on-site health education and health promotion screening services since 2000. 5 to 8 RHAs and peer leaders helped residents to the van and processed referral information for those who agreed to participate in the study. Residents with screen-positive results were offered help in making an appointment at the health center of their choice. RHAs made appointments either on-site or at a later time, in which case the person being referred was called with the appointment information. **CHW Core Roles Met:** Bridging/cultural mediation between community and healthcare system + ensuring	

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
	reported for either intervention arm	that people get services they need + providing direct services and meeting basic needs **CHW Models of Care Met:** Member of care delivery team + navigator **CHW Characteristics (BOTH ARMS):** CHW matched to population by: location Payment: RHAs were paid but specifics not given Educational background: NR Years of experience: NR Supervisor: NR CHW performance evaluation: NR Recruitment: RHAs recruited to the training program through an application process Training: RHAs completed a 14-week training program (not specified) **Other provider(s) (Arm 2):** mobile health van staff (not specified) + dentist **Other provider(s) activities (Arm 2):** Van staff screened for hypertension, high cholesterol, glucose, diabetes risk, and dental disease. **Community Partners Involved (Both Arms):** Boston Public Health Commission + Partners in Health + University of Boston	

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
		School of Public Health + Boston Housing Authority **Comparison Group:** Were residents of the control resident housing communities. They did not have resident housing advisors (RHAs). Residents of the control sites received the same flyers as intervention sites, which tenant management staff distributed in accordance with earlier Boston Public Health Commission (BPHC) protocols. In 2008, the 2 sites that did not have RHAs serving as controls in 2007 received the intervention	
Author(s): Shlay et al. 2011 **Location:** Colorado **Setting:** Community health center (Non-Academically affiliated PCP) **Scale:** 486 intervention participants from 3 community health centers in the Denver Health and Hospital Authority (DHHA) and 480 comparison patients from 3 other DHHA community health centers during the same time. Four bilingual CHWs participated in this intervention. **Design:** Pre-post with comparison **Intervention duration:**	**Inclusion:** A Framingham risk score of 10% or greater + age 30 to 64 yrs. old + having an active status at 1 of the 3 intervention community health centers. (Seen at least twice during the previous 18 months; the most recent visit had to be within the previous 6 months) **Exclusion:** Pregnant or lactating + had a history of coronary artery disease, ischemic cardiomyopathy, myocardial infarction, peripheral vascular disease, symptomatic carotid artery disease, or abdominal aortic aneurysm + had a comorbid illness with a life expectancy of less than 12 months.	**CHW Activities:** Patient navigator provided one-on-one face-to-face sessions lasting 1 hour for participants at a community health center covering behavioral goal setting and CVD risk-reduction activities + one-on-one follow up telephone sessions that occurred at 1 to 4 weeks and 6 to 10 weeks after enrollment generally lasting 15 minutes each to encourage ongoing behavioral change. Navigator encouraged follow-up with the primary care provider for ongoing clinical care. Also system components included EHRs/EMRs **CHW Core Roles Met:** Bridging/cultural mediation between community and the healthcare system + providing culturally appropriate information and health education + ensuring that people get services they	**Blood Pressure Outcomes** **Proportion with BP at goal (%)** **Baseline:** Intervention (n=486): 24.5% Comparison (n=480): 19.4% **12 Months; BP < 130/80 mmHg:** Intervention (n=486): 16.4% Comparison (n=480): 13.7% **Absolute pct pt change = -2.4; 95% CI: -6.9 to 2.1** **Change in SBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=486):138.0 (18.0) Comparison (n=480): 140.0 (20.0) **12 Months:** Intervention (n=340): 139.0 (18.0) Comparison (n=340): 139.0 (19.0) **Change in mean difference = 2.00; p=0.9** **Change in DBP (mmHg)** **Baseline: Mean (SD)** Intervention (n=486): 81.0 (11.0)

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
12 months **Quality of Execution:** Fair (2 limitations) **Limitation(s):** Description - gender not provided Interpretation of Results – F/u < 80% **Funding:** Colorado Dept. of Public Health and Environment (Cancer, Cardiovascular, and Pulmonary Disease Grant) **Applicability:** For this study, mainly to low-income Hispanics who on average were obese with risk factors for cardiovascular disease and diabetes receiving one-on-one face-to-face sessions and one-on-one telephone calls from a CHW.	**Reported Baseline Demographics [Intervention Participants]:** Age (mean): 56 yrs. Sex: NR Race/ethnicity: Hispanic 66.0%; unknown: 34.0% Education: NR Low income: 76% (<150% FPL) Health Insurance: NR Unemployed: NR Previously incarcerated: NR **Reported Risk Factors [Intervention Participants]:** High BP: approx. 50.0% Diabetes: approx. 50.0% Smoking: 34.0% BMI (mean): 33 Kg/m^2 Depression: 55.0%	need + providing informal counseling and social support + building individual and community capacity **CHW Models of Care Met:** Navigator + screening and health education provider **CHW Characteristics:** CHW matched to population by: Language + race/ethnicity (Hispanic) Payment: NR Educational background: NR Years of experience: NR Supervisor: Intervention manager CHW performance evaluation: evaluated by intervention manager Recruitment: NR Training: Institutional training (e.g., community college) + didactic lecture to focus on health behavior change. Also FRS and CVD risk reduction calculations **Other provider(s):** NR **Other provider(s) activities**: N/A **Community Partners Involved:** N/A **Comparison Group:** Participants in comparison group were matched to the intervention	Comparison (n=480): 84.0 (10.0) **12 Months:** Intervention (n=340): 81.0 (12.0) Comparison (n=340): 83.0 (9.0) **Change in mean difference = 1.00; p=0.02** **Cholesterol Outcomes** **Proportion with total cholesterol at goal (%)** **Baseline:** Intervention (n=486): 16.0% Comparison (n=340): 18.0% **12 Months; TC <160 mg/dL:** Intervention (n=480): 29.0% Comparison (n=340): 20.0% **Absolute pct pt change = 11.0; p<.001** **Proportion with HDL-C at goal (%)** **Baseline:** Intervention (n=486): 6.0% Comparison (n=340): 8.0% **12 Months; HDL >/=60 mg/dL:** Intervention (n=480): 7.0% Comparison (n=340): 8.0% **Absolute pct pt change = 1.00; p=0.56** **Proportion with LDL at goal (%)** **Baseline:** Intervention (n=486): 38.0% Comparison (n=340) 40.0% **12 Months; LDL<100 mg/dL:** Intervention (n=480): 36.0% Comparison (n=340): 40.0% **Absolute pct pt change = -2.00; p=0.21** **Change in total cholesterol (mg/dL)** **Baseline: Mean (SD)** Intervention (n=486): 192.0 (40.0) Comparison (n=340): 197.0 (48.0) **12 Months:** Intervention (n=480): 183.0 (44.0) Comparison (n=340): 197.0 (49.0)

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
		group by age, race/ethnicity, sex, and month and year in which the participant was identified for inclusion. Participants in the comparison group were not contacted or counseled or had their health behaviors assessed.	**Change in mean difference = -9.00; p<.001** **Change in LDL (mg/dL)** **Baseline: Mean (SD)** Intervention (n=486): 114.0 (37.0) Comparison (n=340): 112.0 (39.0) **12 Months:** Intervention (n=480): 118.0 (37.0) Comparison (n=340): 111.0 (40.0) **Change in mean difference = 5.00; p<0.02** **Change in HDL (mg/dL)** **Baseline: Mean (SD)** Intervention (n=486): 44.0 (10.0) Comparison (n=340): 44.0 (12.0) **12 Months:** Intervention (n=480): 44.0 (10.0) Comparison (n=340): 44.0 (12.0) **Change in mean difference = 0; p=0.74** **Change in BMI/Weight Outcomes** **Change in Weight (lbs)** **Baseline: Mean (SD)** Intervention (n=486): 194.0 (43.0) Comparison (n=480): 191.0 (46.0) **12 Months:** Intervention (n=340): 191.0 (46.0) Comparison (n=340): 191.0 (7.0) **Change in mean difference = 1.0; p=0.28** **Change in CVD Risk Score Outcomes** **Change in Framingham Risk Score (FRS)** **Baseline: Mean (SD)** Intervention (n=486): 15.5 (6.2) Comparison (n=340): 15.0 (5.9) **12 Months:** Intervention (n=340):14.8 (6.5) Comparison (n=340): 15.8 (6.0) **Change in mean difference = -1.50; p=0.03**

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
			Additional Outcomes (see separate table): Physical activity, Nutrition, Smoking, Medication adherence **Summary:** Patient navigators (CHWs) helped to achieve behavioral health change; specifically 10 of the 11 outcomes were favorable including improvements in physical activity, nutrition, medication adherence, and reductions in smoking. Clinical change for the outcomes was mixed with reductions in mean total cholesterol and a favorable FRS but no positive effects shown for BP measures, mean HDL cholesterol, mean LDL cholesterol, or proportion with LDL at goal
Author(s): Tsui (2013) **Location:** Washington **Setting:** International Community Health Services (ICHS) federal qualified health center (FQHC) **Scale:** FQHC with 4 sites including 2 full-service primary care clinics. During the study period, the ICHS provided care to 3903 patients with hypertension and 2876 patients with diabetes. For analysis: Patients with hypertension, n=223 (113 cases and 110 controls); Patients with diabetes, n **Design:** Case-control **Intervention duration:** 18 months **Quality of Execution:** Fair	**Inclusion:** BP ≥160 and ≥100 mm Hg and a recent BP reading measured at least 12 months following appearance on a population health management (PHM) report + HbA1c ≥ 9.0% or more with a recent HbA1c result measured at least 12 months following appearance on a PHM report. **Exclusion:** NR **Reported Baseline Demographics [Intervention Participants]:** Age (mean): 65.6 yrs. Sex: Male: 34.82% Female: 66.07% Race/ethnicity: NR; but mostly Asian and Pacific Islanders Education: NR	**CHW Activities:** Provided one-on-one education and counseling sessions via telephone from the ICHS federal clinic. EHRs/EMRs were also kept and collected. **CHW Core Roles Met:** Bridging/cultural mediation between community and healthcare system + providing culturally appropriate information and health education + ensuring people get services they need **CHW Models of Care Met:** Member of care delivery team + navigator + screening and health education provider + outreach/enrollment/information agent **CHW Characteristics:** CHW matched to population by: Language Payment: NR Educational background: NR	**Blood Pressure Outcomes** **Proportion with BP at goal (%)** **Baseline:** Intervention (n=223): 0% Comparison (n=223): 0% **F/u Not Reported:** Intervention (n=223): 35.4% Control (n=223): 17.5% **Absolute pct pt change = 17.9; 95% CI: 9.9 to 25.9** **Diabetes Outcomes** **Proportion with A1c at goal (%)** **Baseline:** Intervention (n=141): 0% Control (n=141): 0% **F/u Not reported:** Intervention (n=71): 64.8% Intervention (n=70): 58.7% **Absolute pct pt change = 6.2; 95% CI: -9.8 to 22.2** **Change in HbA1c (%)** **Baseline: Mean (SD)** Intervention (n=141): 10.5 (NR) Control (n=141): 10.6 (NR)

Study Details	Population Characteristics	Intervention + Comparison Description	Health Outcomes and Summary
(3 limitations) **Limitation(s):** Measurement - Use of EHR for information, however lack of knowledge on use of EHRs, may have resulted in errors in data entry Interpretation of Results – Intervention and control groups significantly different at baseline for insurance and language + intervention targeted to patients with greatest need for improvement possibly biasing the results **Funding:** David E. Rogers Fellowship Program of the New York Academy of Medicine **Applicability**: For this study, mainly to older adult females with high blood pressure and diabetes receiving one-on-one telephone sessions with CHWs and additional care and services from a primary care physician, nutritionist, health educator, and pharmacist for management of these conditions.	Low income: NR Public or private insurance: 80.9% Unemployed: NR **Reported Risk Factors [Intervention Participants]:** Risk factor status not reported	Years of experience: NR Supervisor: NR CHW performance evaluation: NR Recruitment: Existing paraprofessional navigators were already employed in the clinic Training: Received population health management (PHM) training **Other provider(s):** physician + nutritionist + health educator + pharmacist **Other provider(s) activities**: Medication management consultation with pharmacist; Potential appointments/services with primary care physician, pharmacist, health educator, or nutritionist; Consultation on health education, nutrition and lifestyle from nutritionist and health educator. Follow-up with their primary care providers encouraged (PCPs). **Community Partners Involved:** N/A **Comparison Group:** Controls did not receive or refused a PHM intervention. Documentation in the PHM reports and/or the EHR was used to determine whether PHM interventions were offered, received, or refused.	**F/u Not reported:** Intervention (n=71): 8.2 (NR) Intervention (n=70): 9.2 (NR) **Change in mean difference = -0.88; p=0.0074** **Additional Outcomes:** N/A **Summary:** There was a significant increase in the proportion of participants with BP controlled as well as an increase in the proportion of participants with A1c controlled at goal. There was a small but significant reduction in HbA1c levels.

Abbreviations:

BMI, body mass index

CI, confidence interval

DBP, diastolic blood pressure

DBP, diastolic blood pressure

HDL, high density lipoprotein

kg/m^2, kilograms per meters squared

LDL, low density lipoprotein

mg/Dl, milligrams per deciliter

mmHg, millimeters of mercury

NR, not reported

SBP, systolic blood pressure

SD, standard deviation