

Heart Disease and Stroke Prevention: Team-based Care to Improve Blood Pressure Control

Summary Evidence Tables - Systematic Economic Review

This table outlines information from the studies included in the Community Guide economic review of team-based care to improve blood pressure control. It details study design and economic analysis, population and intervention characteristics, and economic outcomes considered in this review. Complete references for each study can be found in the Included Studies section of the [review summary](#).

Abbreviations Used in This Document:

- Economic outcomes:
 - QALY: quality-adjusted life year
 - ROI: return on investment
- Effectiveness outcomes:
 - A1c: glycated hemoglobin
 - BP: blood pressure
 - DBP: diastolic blood pressure
 - HDL-C: High density lipoprotein cholesterol
 - LDL-C: Low density lipoprotein cholesterol
 - SBP: systolic blood pressure
- Study design:
 - RCT: randomized controlled trial
- Measurement terms:
 - DiD: difference in difference
 - Pct pt: percentage point
- Other terms:
 - JNC-7: The Seventh Report of the Joint National Committee on Prevention, Detection, Evaluation, and Treatment of High Blood Pressure
 - ADA: American Diabetes Association
 - CHD: coronary heart disease
 - CHW: community health worker
 - CKD: chronic kidney disease
 - Conversion Factor: Consumer Price Index/Purchasing Power Parity
 - CV: cardiovascular
 - CVD: cardiovascular disease
 - ED: emergency department
 - EHR: electronic health record
 - HCUP: Healthcare Cost and Utilization Project
 - HTN: hypertension
 - MEPS: Medical Expenditure Panel Survey
 - MI: myocardial infarction
 - mmHg: millimeters of mercury
 - MTM: Medication Therapy Management
 - NHS, National Health Service, UK
 - NA, not applicable
 - NR: not reported
 - PCP: primary care provider
 - SMBP, self-measured blood pressure
 - T2DM: type 2 diabetes
 - UKPDS: United Kingdom Prospective Diabetes Study

Notes:

Quality of economic estimates – Studies are assessed to be of good, fair, or limited quality. This valuation is based on two domains: [Quality of Capture](#), and [Quality of Measurement](#).

Race/ethnicity of the study population: The Community Guide only summarizes race/ethnicity for studies conducted in the United States.

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Author (Year): Adair et al. (2013)</p> <p>Design: RCT</p> <p>Economic Method: Intervention cost and healthcare cost</p> <p>Funding Source: Rabina Foundation</p> <p>Monetary Values: Reported in 2012 U.S. dollars</p>	<p>Location: Multiple locations, Minnesota, USA</p> <p>Setting: Primary care clinics</p> <p>Population: Patients with hypertension, diabetes, or congestive heart failure aged 18 to 79 years who had an office visit during the 6-month enrollment period.</p> <p>Sample Size: Intervention: 1,429 Control: 706</p> <p>Characteristics: Mean Age: 61 years Female: 50% Medicaid: 7% White: 90% HTN: 82% T2DM: 65% Heart failure: 6% High school or less: 39%</p> <p>Baseline clinicals: SBP: 128.8 DBP: 74.5</p>	<p>Intervention: 12 care guides with 2 or more years of college assigned to 6 clinics. Median number of patients per care guide was 120. Care followed ADA and JNC-7.</p> <p>2 weeks training on basic information about hypertension, diabetes, and heart failure, barriers to care and resources for overcoming them; professional behavior; use of EHR; and behavior change techniques, including motivational interviewing, goal setting, contracting, and feedback.</p> <p>Care guides had workstation locations within clinic. Two registered nurses supervised the lay workers.</p> <p>Main objective to help patients and their primary care providers achieve recommended written and signed care goals.</p>	<p>Intervention effects: Measured at 12 months.</p> <p>Pct pt change in goals met (odds of meeting goal): All goals: 3.0 (1.31) HTN: 3.0 (1.29) T2DM: 1.9 (1.35) Heart failure: -1.5 (1.58)</p> <p>Source: Trial records</p> <p>Measure Type: DiD</p>	<p>Intervention cost: \$286 per patient per year</p> <p>Components: Care guides (\$511,176); 2 nurse supervisors (\$116,736); training (\$3,031), 12 workstations (\$108,000 amortized over 5 years)</p> <p>Care guides reported median of 4 provider contacts and 7 patient contacts (2 face to face and 5 by phone)</p> <p>Source: Study records and human resources for compensation.</p> <p>Quality: Good</p>	<p>Healthcare cost: Pre 1 year (post 1 year) mean: Inpatient intervention \$30,041 (\$32,791) control \$25,815 (\$32,734) with difference -\$4,169 Professional charges intervention \$3,746 (\$3,812) control \$3,759 (\$3,851) with difference -\$26</p> <p>Components: Inpatient, ED, outpatient</p> <p>Source: Health plan claims data All cause</p> <p>Measure Type: DiD</p> <p>Productivity: NR</p> <p>Quality: Fair</p>	<p>ROI: 13.7</p> <p>Limitations: Baseline inpatient count of visits and cost much higher for intervention compared to control. However, note the estimated difference is from a regression presumably adjusting for baseline.</p> <p>Quality: Fair</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
	LDL: 86.1 A1c: 7.4 Time Horizon: Recruitment July 2010 to April 2012. Intervention length 12 months.	Care guides met with providers and sent them electronic messages as needed. Quarterly reports on goals achieved and not achieved for patients and primary care providers. Comparison: Both usual care and intervention received written material on benefits of achieving disease treatment goals.				
Author (Year): Allen et al. (2014) Design: RCT Economic Method: Intervention cost and cost per unit effectiveness outcomes. Partial healthcare cost. Funding Source: National Heart Lung and Blood Institute Grant Monetary Values: Reported in 2011 U.S. dollars	Location: Baltimore, Maryland, USA Setting: Patients drawn from two federally qualified health centers, Baltimore Medical Systems Inc (BMS). Population: African American or White patients ≥21 years with diagnosed CVD, T2DM, high BP, high cholesterol. Sample Size: Intervention: 261 Control: 264 Characteristics: African American: 79%	Intervention: Community Outreach and Cardiovascular Health study. Tailored educational and behavioral counseling for lifestyle modification, pharmacologic management, and telephone follow-ups. Nurse Practitioner (NP)-led team-based case management with CHWs for CVD risk reduction. Intensity of interaction with patients and physician depended on goals achieved. NP coordinated cases, managed intervention plan, lifestyle counseling, drug titration and	Intervention effects: A1c reduced by 0.5 pct pt LDL reduced by 15.9 mg/dL SBP decreased by 6.2 mmHg DBP decreased - 3.1 mmHg Source: Study records Measure Type: DiD	Intervention cost per patient per year: \$251 (NP=\$217 and CHW=\$34) Cost for control per patient per year: \$308 Components: CHW and NP time with patients Preparation and follow-up time Wage rate plus 30% Mean encounters during 1 year with: NP 7.6, CHW 5.3 Source:	Healthcare cost per person per year: Intervention Labs: \$439 Medication: \$2,139 Total: \$2,578 Control Labs: \$206 Medication: \$1,684 Total: \$1,890 Difference: \$688 higher Components: Laboratory, drugs Source: Health plan claims data Measure Type: DiD Productivity	Intervention plus healthcare cost per patient per year: Intervention: \$2,829 Control: \$2,198 Difference: \$631 Cost per unit reduction in key outcomes: SBP: \$102 per mmHg DBP: \$204 per mmHg LDL: \$40 per mg/dL A1c: \$1,262 per pct pt Quality: Fair

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
	<p>Private insurance: <50% % Female: 71% Mean Age: 55 years</p> <p>Time Horizon: Recruited July 2006 to July 2009. Length of intervention is 12 months.</p>	<p>prescription, conferred with physician, supervised CHWs.</p> <p>CHW met patients to reinforce lifestyle and drug adherence instructions, assisted patients with designing strategies.</p> <p>Comparison: Usual care enhanced with feedback on CVD risk factors to patients and primary care providers.</p>		<p>NP and CHW time from 30% sample of patient records. Computed average physician encounter time and wage rate. Mean visits in 1 year: 2.8</p> <p>Quality: Fair</p>	<p>NR</p> <p>Quality: Fair</p>	<p>Comment: Mix of patients with diabetes, CVD, high BP, high cholesterol</p> <p>The intervention cost compared to usual primary care by physician is negative or cost-saving.</p> <p>Healthcare cost does not include ED and inpatient stays.</p>
<p>Author (Year): Augustovski et al. (2018) Linked to He et al. (2017)</p> <p>Design: RCT</p> <p>Economic Method: Cost per QALY</p> <p>Funding Source: National Heart, Lung, and Blood Institute; partially by the National Institute of General Medical Sciences</p>	<p>Location: Multiple provinces, Argentina</p> <p>Setting: Primary care centers</p> <p>Population: Low-income patients and household members 21 years or older with SBP/DBP ≥ 140/90</p> <p>Sample Size: Intervention: 743 Control: 689</p> <p>Characteristics: Mean age: 56 years Female: 53%</p>	<p>Intervention: Home-visit CHW intervention with free BP monitors. Physician care in public primary care centers, physician online education on guideline-based stepped-care for high BP, and patient personalized weekly text messaging for lifestyle and medication adherence. CHWs had 2-day interactive training and field testing. Initial home visit was 90 minutes to provide BP monitor, pill box, written education materials, and log to record BP readings, and to train on</p>	<p>Intervention effects: Measured at 18 months for intervention versus control</p> <p>Change in SBP: -5.3 DBP: -5.1</p> <p>Change in percentage with BP control: 19 pct pt</p> <p>Change in QALY: 0.042</p>	<p>18-month cost for intervention per patient: \$108</p> <p>Components: Cell phone platform development (\$6.87), training workshops (\$4.02), patient education materials (\$6.12), BP monitor (\$18.29), CHW visits (\$61.27), field work coordination (\$3.89), text messages (\$7.56)</p>	<p>18-month change in healthcare cost per patient: Intervention: \$196.26 Control: \$153.58 Difference: \$42.52</p> <p>Components: Outpatient, inpatient, BP medications, labs</p> <p>Measure Type: DiD</p> <p>Productivity: NR</p> <p>Source: Medical records</p> <p>Quality: Good</p>	<p>Cost per QALY gained: \$3,299</p> <p>100% certainty cost-effective with threshold at 1 GDP Argentina (\$14,062) in 1000 simulations</p> <p>Quality: Good</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Monetary Values: Reported in 2009 U.S. dollars</p>	<p>Mean SBP: 151.7 Mean DBP: 92.2 On medication: 92% Primary care visit past 6 months: 59%</p> <p>Time Horizon: Recruited June 2013 to April 2015. Study length was 18 months.</p>	<p>use of BP monitor. Subsequent visits were 60 minutes. CHWs updated physicians about visit results. Physicians received monthly BP values to determine medication changes.</p> <p>Comparison: Usual care in primary care centers</p>	<p>92% of planned home visits were completed</p> <p>Source: Trial records and EuroQoL EQ-5D-3L (3L adds a visual questionnaire to the 5D text-based questionnaire) for QALY</p> <p>Measure Type: DiD</p> <p>Quality: Good</p>	<p>Source: Study and trial records</p> <p>Quality: Good</p>		
<p>Author (Year): Barton et al. (2012)</p> <p>Design: RCT</p> <p>Economic Method: Cost per QALY</p> <p>Funding Source: Medical Research Council (MRC) National Prevention Research Initiative</p> <p>Monetary Values:</p>	<p>Location: Liverpool, UK</p> <p>Setting: CHWs within urban community</p> <p>Population: Patients ≥ 18 years age identified by 5 general practices serving deprived communities, with one of 5 CVD risks: high BP, high cholesterol, smoking, diabetes, BMI>30. Excluded established CVD.</p> <p>Sample Size: Intervention: 72</p>	<p>Intervention: 6 CHWs trained by research team. Behavior changes through short-term goals and building self-efficacy. Focus on diet, beliefs, challenges to change. CHW service available for 3 months with target of 6 meetings, ideally face to face at client choice of location, and additional phone support.</p> <p>Comparison: Usual care plus health promotion literature including heart related, and food diary.</p>	<p>Intervention effects: 6-month mean incremental QALY 0.028</p> <p>Source: QALY estimated using EQ-5D for health-related quality of life</p> <p>Measure Type: DiD</p> <p>Quality: Good</p>	<p>6-month cost for intervention per patient: £151.01</p> <p>Components: CHW wages and benefits</p> <p>Source: Records maintained by CHW. Training and supervision costs apportioned across face-to-face contacts.</p> <p>Quality: Fair</p>	<p>6-month change in healthcare cost per patient:</p> <p>Intervention Baseline: £441.33 6-month: £366.89</p> <p>Control Baseline: £398.45 6-month: £377.17</p> <p>Difference: £53.16 saving healthcare cost to the National Health Service (NHS)</p> <p>Components: Outpatient, inpatient,</p>	<p>6-month change in healthcare + personal social services cost + intervention cost per patient: £97.85</p> <p>Incremental QALY: 0.028 over 6 months</p> <p>Cost per QALY gained: £14,480</p> <p>Quality: Fair</p> <p>Comments: Probability intervention is</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
Reported in 2009 UK pounds	<p>Control: 38</p> <p>Characteristics: Mean age: 53 years Female: 59% BMI>30: 64% High cholesterol: 49% High BP: 39% Diabetes: 14% Smoke: 21%</p> <p>Time Horizon: Recruitment Feb-Aug 2008. Study length was 6 months.</p>				<p>drugs, personal social services</p> <p>Measure Type: DiD</p> <p>Productivity: NR</p> <p>Source: Patient reported units of utilization converted to cost using NHS cost per unit.</p> <p>Quality: Fair</p>	<p>cost-effective is 39% if threshold is £20,000. Short horizon implies estimate is conservative.</p>
<p>Author (Year): Billups et al. (2014) Linked to Magid et al. (2013)</p> <p>Design: Modeled from RCT</p> <p>Economic Method: Intervention cost; healthcare cost; cost per life year gained</p> <p>Funding Source: Kaiser Permanente</p> <p>Monetary Values:</p>	<p>Location: Denver-Boulder Metro, Colorado, USA</p> <p>Setting: Primary care clinic</p> <p>Population: Patients in Kaiser Permanente-Colorado aged 18 to 79 years with uncontrolled hypertension. Must have a primary care provider and be registered on the health system's patient portal.</p> <p>Sample Size: Intervention: 175 Control: 173</p> <p>Characteristics:</p>	<p>Intervention: Pharmacist collaborate with physicians for blood pressure control. Home blood pressure (HBP) group's BP measurements sent automatically from device via American Heart Association web-interface Heart360 to clinical pharmacy specialist to manage hypertension. Management by email and phone. EHR system enables web-based communication between patients and providers. Under pre-approved collaborative arrangement,</p>	<p>Intervention effects: SBP reduced 12.5 mmHg versus control</p> <p>At 6 months, there was 19 pct pt increase in patients meeting blood pressure goal among intervention versus control group.</p> <p>Source: Study records</p> <p>Measure Type: DiD</p>	<p>Intervention cost per person per year: \$200</p> <p>Components: Labor</p> <p>Source: Study records and pharmacist time</p> <p>Quality: Fair</p>	<p>Change in healthcare cost per patient per year versus control: \$276</p> <p>Components: Inpatient, outpatient, ED, medication.</p> <p>Measure Type: DiD</p> <p>Source: Medical claims</p> <p>Quality: Good</p> <p>Productivity: NR</p>	<p>Net cost per patient per year: \$476</p> <p>Quality: Fair</p> <p>Net cost per life year gained: \$3,330</p> <p>Quality: Good</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Reported in 2013 U.S. dollars.</p>	<p>Mean Age: 60 years Female: 38% White: 82% African American: 7% Hispanic: 7% Asian: 3% Mean SBP 149 DBP: 90</p> <p>Time Horizon: Intervention length was 6 months.</p>	<p>pharmacist may initiate or alter drug therapy and order labs and provide medication and lifestyle counseling.</p> <p>Comparison: Usual physician care.</p>				
<p>Author (Year): Chan et al. (2012)</p> <p>Design: RCT</p> <p>Economic Method: Intervention cost and partial healthcare cost</p> <p>Funding Source: School of Pharmacy, The Chinese University of Hong Kong and the Diabetes Research Fund, Diabetes Hong Kong</p> <p>Monetary Values:</p>	<p>Location: Hong Kong, China</p> <p>Setting: Diabetes clinic in public hospital</p> <p>Population: Patients referred by diabetes nurses to pharmacists. Age 18 and older with T2DM, A1c greater than 8%, and at least 5 medications, one of which was hypoglycemic. Those with existing CVD excluded.</p> <p>Sample Size: Intervention: 51 Control: 54</p> <p>Characteristics: Mean Age: 63 years Female: 41%</p>	<p>Intervention: Pharmacist met patient for 15-30 minutes before every visit with physician. Included medication history review. Each visit addressed areas of medication adherence, knowledge and beliefs, skills, perceived health, and cognitive function. Tailored medication adherence, CVD education, and lifestyle modifications were provided. Notes made in medical record to physician for drug related problems. Provided color coded pill boxes and drug bags. Medications were for T2DM, BP, lipids, anti-coagulation.</p>	<p>Intervention effects: Measured at baseline and 9 months for intervention versus control</p> <p>Mean pharmacist visits per patient: 5 33% related to adherence and 30% in lifestyle modification. Compliance (=number of tablets taken/correct number) improved by 20.5 pct pt. CHD risk score reduced 0.11. 5-year</p>	<p>Intervention cost per patient over 9 months: \$64</p> <p>Components: Pharmacist time</p> <p>Source: Tracked in study</p> <p>Quality: Fair</p>	<p>Healthcare Cost: NR</p> <p>Productivity: NR</p>	<p>Cost per CHD event averted</p> <p>5-year probability of CHD reduced 1.64%</p> <p>Intervention cost per patient: \$64</p> <p>Cost per CHD event avoided: \$3902</p> <p>Average cost of MI treatment: \$8989</p> <p>Savings per patient over 5 years: \$5086</p> <p>Quality: Fair</p> <p>Limitations:</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Reported in 2008 in U.S. dollars</p>	<p>Mean SBP: 141 Mean DBP: 75 Mean BMI: 25.2 Mean A1c: 9.7% Mean CHD risk: 2.16 Compliance: 74% T2DM: 100%.</p> <p>Time Horizon: Study during the May 2008 to March 2009. Intervention length was 9 months.</p>	<p>Comparison: Usual physician care in T2DM clinic without pharmacist services</p>	<p>probability of CHD reduced 1.63 pct pt Stroke risk reduced 1.37. SBP/DBP reduced by 3.3/2.1 mmHg A1c reduced 1.17 pct pt. ADA goals increased 6.9 pct pt</p> <p>Source: Study records</p> <p>Measure Type: DiD</p>			<p>Change in healthcare cost not estimated. Short term adherence self-reported.</p>
<p>Author (Year): Chung et al. (2011)</p> <p>Design: Pre to post with control</p> <p>Economic Method: Intervention cost</p> <p>Funding Source: The School of Pharmacy, The Chinese University of Hong Kong</p>	<p>Location: Hong Kong, China</p> <p>Setting: Outpatient Lipid Clinic in public hospital</p> <p>Population: Patients diagnosed with dyslipidemia and visiting lipid clinic (resistant dyslipidemia). No exclusion based on existing CHD.</p> <p>Sample Size: Intervention: 150 Control: 150</p>	<p>Intervention: Patients met with pharmacist 3 times during 24-month study before routine clinic visit with physician. Pharmacist made drug therapy suggestions to physicians, if necessary. Pharmacist performed patient education and follow-up of lipid profile and assessed Framingham risk score. Activities included explaining clinical values to patient, importance of medication and adherence, medication side effects, suggested</p>	<p>Intervention effects: Measured at 24 months LDL-C -0.49 HDL-C 0.05 Total Cholesterol - 0.66 Triglycerides - 0.42</p> <p>Mean Adherence (Number of days pills taken/Number of days of follow-up): 2.3 pct pt</p>	<p>Intervention cost per patient per year: \$114.84 Scaled intervention cost to treat all ~\$5,500 Intervention cost for dyslipidemia patients per year: \$52,635 (\$9.68 per patient per month)</p> <p>Components: Pharmacist time in documentation, educational visits, and follow-up calls</p> <p>Source:</p>	<p>Change in Healthcare Cost: Potential avoidance of \$6 million in healthcare cost due to acute myocardial infarctions avoided per year (770 MIs at cost of \$8010 per event).</p> <p>Components: All costs for myocardial infarction</p> <p>Source: Based on incremental numbers with LDL-C at goal</p> <p>Measure Type:</p>	<p>Reviewers Calculations Cost avoided \$6,167,700 by extrapolations to MI's avoided Intervention scaled cost \$638,880</p> <p>Benefit to cost ratio: 9.6</p> <p>Quality: Fair</p> <p>Limitations: Not randomized or blinded</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Monetary Values: Reported in 2006 U.S. dollars</p>	<p>Characteristics: Mean Age: 56 years Female: 45% Mean LDL-C: 3.53 mmol/L Mean HDL-C: 1.60mmol/L CHD-Risk Moderate 9.3%; High 32.7% HTN: 50.7% T2DM: 26.7% Existing CVD: ≤20% Mean Adherence: 77.5% Adherent: 57%.</p> <p>Time Horizon: Recruitment starting Oct 2005. Intervention length 24 months</p>	<p>lifestyle changes, and relationship of lipid profile to CHD risk. Patients provided with educational leaflet on dyslipidemia. Check-up phone calls once a month following checklist on wellbeing, adherence, and drug issues. Patients also provided adherence aids – pill boxes, diaries, reminder calls, and calendars.</p> <p>Comparison: Routine lipid clinic care from physician without pharmacist</p>	<p>Percent Adherent (percentage of patients with adherence > 75%): 13.7 pct pt</p> <p>All 7 pharmacist recommended alterations to drug therapy were rejected by physician or by patient.</p> <p>Measure Type: DiD except for adherence</p>	<p>Trial records and Hong Kong pharmacist average salary</p> <p>Quality: Good</p>	<p>Post only</p> <p>Productivity: NR</p> <p>Quality: Fair</p>	<p>Specialized lipid clinic</p> <p>Notes: Adherence already high at 77%</p>
<p>Author (Year): Dehmer et al. (2016)</p> <p>Design: Model</p> <p>Economic Method: Modeled cost per QALY</p> <p>Funding Source: Centers for Disease Control and Prevention</p>	<p>Location: Modeled for USA</p> <p>Setting: Primary Care</p> <p>Population: Modeled for patients newly diagnosed and treated for high BP in usual care and referred to intensive team care from second year onwards.</p> <p>Sample Size: Modeled for 1 million patients</p>	<p>Intervention: Effects drawn from 16 study arms with team care mostly with pharmacist addition, followed by nurse. All had medication management, half had team members authorized to change treatment, 11 had lifestyle education and 5 had SMBP. 11 were pharmacists team members. 90% acceptance of TBC and 80% annual persistence of effects.</p>	<p>Intervention effects: Main effect is reduction in SBP of 8.1 mmHg</p> <p>LDL-C reduced by 11.9</p> <p>10-year QALY increase: 922,000</p> <p>Source: Modeled disease outcomes were myocardial infarction,</p>	<p>Intervention cost per patient per year: \$887</p> <p>Components: Healthcare staff time based on commercial claims for team-based care. Patient travel and wait time.</p> <p>Modeled 10-year program cost: \$22.9 billion</p> <p>Source:</p>	<p>Modeled 10-year averted healthcare cost: \$25.3 billion</p> <p>Components: NR</p> <p>Source: MEPS data</p> <p>Productivity: Modeled 10-year productivity increase \$11 billion</p> <p>Measure Type: DiD</p>	<p>Modeled 10-year cost per QALY gained: \$2,920</p> <p>Quality: Good</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Monetary Values: Reported in 2012 U.S. dollars</p>	<p>Characteristics: Age ≤55 years: 52.8% Female: 52.4% CVD: 12.8% HTN: 100% T2DM: 18.7% Mean SBP: 142 Mean LDL-C: 120.3 Medicaid: 3.9% Medicare: 24.9% Commercial insurance: 53.2 Uninsured: 15.1%</p> <p>Time Horizon: Modeled</p>	<p>Team care encounters 4 in-person and 8 phone visits per year. First visit 60 minutes and others 15 minutes.</p> <p>Comparison: Current national access to team-based care</p>	<p>stroke, congestive heart failure, angina pectoris, intermittent claudication, and CVD-related death based on 1-year Framingham risk equations for age, sex, BMI, systolic BP (SBP), cholesterol levels, smoking status, and history of CVD.</p> <p>Quality: Good</p>	<p>MarketScan claims data</p> <p>Quality: Good</p>	<p>Quality: Good</p>	
<p>Author (Year): Dehmer et al. (2018) Linked to Margolis et al. (2013)</p> <p>Design: Modeled based on RCT</p> <p>Economic Method: Intervention cost; healthcare cost</p> <p>Funding Source: National Heart,</p>	<p>Location: Minneapolis-St. Paul, Minnesota, USA</p> <p>Setting: Community pharmacies</p> <p>Population: HealthPartners enrollees aged ≥ 21 years with 2 or more primary care visits and uncontrolled blood pressure.</p>	<p>Intervention: Home Blood Pressure Telemonitoring and Pharmacist Care Management to Control Hypertension (Hyperlink)</p> <p>Pharmacist case management with home blood pressure monitoring. Patients received home blood pressure monitors that record and transmit to secure website. Patients trained on use of home monitor. Phone meeting</p>	<p>Change in SBP/DBP in Trial: SBP -9.7 DBP -5.1</p> <p>Change in percent with BP Control: 18.4 pct pt</p> <p>Source: Study records</p> <p>Measure Type: DiD</p>	<p>Intervention cost per person per year: \$1,350</p> <p>Components: Labor, blood pressure monitor, subscription to blood pressure transmission and monitoring services</p> <p>Source: Study records and pharmacist visit logs</p> <p>Quality: Good</p>	<p>Change in healthcare cost per patient per year versus control: -\$426</p> <p>Components: Inpatient, outpatient, medication</p> <p>Measure Type: DiD</p> <p>Source: Medical claims</p> <p>Quality: Good</p> <p>Productivity: NR</p>	<p>Net cost per patient per year: \$924</p> <p>Quality: Good</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Lung, and Blood Institute</p> <p>Monetary Values: Reported in 2010 U.S. dollars.</p>	<p>Sample Size: Intervention: 148 Control: 150</p> <p>Characteristics: Mean age: 63 years Female: 48% Caucasian: 86.6% T2DM:13% CVD: 9.7% Mean SBP: 148 Mean DBP: 83 Household income at least \$50K: 67.5%</p> <p>Time Horizon: Recruitment March 2009 to April 2011. Intervention length 12 months</p>	<p>with pharmacist every 2 weeks until blood pressure under control and less frequently after. Managed and provided counseling on medications, nutrition, lifestyle, self-management, and adherence.</p> <p>Comparison: Usual care</p>				
<p>Author (Year): Dixon et al. (2016 a,b) Linked to Salisbury et al. (2016)</p> <p>Design: RCT</p> <p>Economic Method: Cost per QALY</p> <p>Funding Source: National Institute for</p>	<p>Location: Bristol, Sheffield, Southampton, UK</p> <p>Setting: Community</p> <p>Population: Patients recruited from general practices with CVD risk score based on QRISK2 $\geq 20\%$ and high BP and with BMI ≥ 30 or smoking habit.</p> <p>Must have access to phone, internet, email.</p>	<p>Intervention: Telehealth in Chronic Disease (TECH). The present study focuses on CVD among all chronic diseases covered by program. Patients received BP monitors. Healthlines, a computerized behavior management system using scripts for lay health advisers to educate patients on CVD risk and lifestyle, drug treatments and side effects, home BP</p>	<p>Intervention effects: Mean effects at 12 months. No difference in cholesterol level or smoking. SBP reduced 2.7 and DBP reduced 2.8 BMI reduced 0.4</p> <p>Median number of encounters with Healthline 10</p>	<p>Intervention cost per patient per year: £129</p> <p>Components: Calls with patents, BP Monitors 19</p> <p>Source: Study records, task scheduling diaries</p> <p>Quality: Good</p>	<p>NHS healthcare cost per patient per year: £10 higher (Intervention £374, Control £364) Components: Hospital and ambulance, drugs, primary care visits</p> <p>Non-NHS cost per patient per year: Private healthcare £50 lower and out-of-pocket costs for patient £15 higher</p>	<p>Cost per QALY gained</p> <p>NHS perspective at 12 months: Incremental healthcare cost per patient including intervention cost: £138 Incremental QALY: 0.012 Cost per QALY gained: £10,859 Cost-effective at £20K threshold</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Health Research (UK)</p> <p>Monetary Values: Reported in 2013 UK pounds</p>	<p>Sample Size: Intervention: 325 Control: 316</p> <p>Characteristics: Mean age: 67 years Female: 18-21% White: 99% CVD Risk Score: 31% Range of Mean SBP: 147-148 Range of Mean DBP: 80-81 Mean BMI: 31 Diabetes: 20-24% Smoke: 15-19%</p> <p>Time Horizon: Recruitment from December 2012 and July 2013 Outcomes assessed at 12 months.</p>	<p>monitoring and automated feedback, statins, drug adherence with monthly review, and life-style changes. Lay health advisers underwent specific 3-week training.</p> <p>Comparison: Usual care</p>	<p>Mean length of encounter 18 minutes Median number of times participants logged on to the website 14</p> <p>Median change in treatment: 0 Simulated incremental QALY per patient per year 1 year: 0.011 2 years: 0.013 5 years: 0.016 Lifetime: 0.026</p> <p>Source: QALY based on EQ-5D-5L 0.012 increase. Improvement in diet and physical activity noted. Physiological outcomes from primary care notes and from direct survey of patients.</p> <p>Quality: Good</p>		<p>Productivity: Patient worksite productivity £24 higher</p> <p>Simulated incremental NHS cost per patient per year: 1 year: £131 2 years: £124 5 years: £107 Lifetime: £55 Productivity not considered for lifetime simulation.</p> <p>Measure Type: DiD</p> <p>Quality: Fair</p>	<p>with probability 0.77</p> <p>NHS perspective over lifetime: Events and transition probabilities to various states based on CVD risk – myocardial infarction, angina, transient ischemic attack, stroke. Incremental cost per QALY gained (Probability of cost-effectiveness with 20K threshold) 1 year: £11,776 (0.74) 2 years: £9,886 (0.84) 5 years: £6,477 (0.95) lifetime: £2,091 (0.99)</p> <p>Quality: Good</p> <p>Limitations: Intervention effect at 2 years, 5 years, and lifetime assumed with no intervention and no program cost after year 1.</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Author (Year): Fishman et al. (2013) Linked to Green et al. (2008)</p> <p>Design: Modeled from RCT</p> <p>Economic Method: Intervention cost; healthcare cost; cost per QALY gained.</p> <p>Funding Source: National Heart Lung and Blood Institute</p> <p>Monetary Values: Reported in 2009 U.S. dollars.</p>	<p>Location: Western Washington, USA</p> <p>Setting: Primary care clinic</p> <p>Population: Patients aged 25 to 75 years who have, and take medication for, hypertension, excluding patients with existing T2DM and CVD.. Patients' DBP between 90 and 109 mmHg and SBP between 140 and 199 mmHg.</p> <p>Sample Size: Intervention: 261 Control: 258</p> <p>Characteristics: Mean Age: 59 years Female: 56% White: 79% African American: 8% Asian: 5% Mean SBP: 152 Mean DBP: 89</p> <p>Time Horizon: Intervention length was 12 months. Modeled over lifetime.</p>	<p>Intervention: Electronic Communications and Home Blood Pressure Monitoring to Improve Blood Pressure Control (e-BP).</p> <p>Patients received home blood pressure monitor and were trained how to use the device and website tools to work with their physician. Pharmacist developed a medication plan in collaboration with physician and followed stepped medication protocol, with final clinical decisions made by the physician. Supervision of pharmacists by senior clinical pharmacist. Pharmacist provided patient-centered behavioral counseling for medication adherence and lifestyle. Communications occurred over the web.</p> <p>Comparison: Usual physician care with website and education materials</p>	<p>Intervention effects: SBP reduced 8.9 mmHg versus control</p> <p>DBP reduced 3.6 mmHg</p> <p>Source: Trial records</p> <p>Measure Type: DiD</p>	<p>Intervention cost per person per year: \$390</p> <p>Components: Labor, training</p> <p>Source: Study records and pharmacist time logs</p> <p>Quality: Good</p>	<p>Change in healthcare cost per patient per year versus control: \$0</p> <p>Components: Inpatient, outpatient, ED</p> <p>Measure Type: DiD</p> <p>Source: Medical claims</p> <p>Quality: Good</p> <p>Productivity: NR</p>	<p>Net cost per patient per year: \$390</p> <p>Quality: Good</p> <p>Net cost per QALY gained: \$2,314</p> <p>Quality: Good</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Author (Year): Goetzel et al. (2013)</p> <p>Design: Longitudinal with comparison</p> <p>Economic Method: Healthcare cost</p> <p>Funding Source: PPG Industries, Wellness Checkpoint</p> <p>Monetary Values: Reported in 2010 U.S. dollars</p>	<p>Location: National, USA</p> <p>Setting: Worksite at PPG Industries</p> <p>Population: Workers ages 18 to 64 years at 37 U.S. PPG sites with worksite wellness programs. Excluded workers enrolled in HMOs.</p> <p>Sample Size: Intervention size average over 6 years: 8,609</p> <p>Characteristics: Mean Age: 48 years Female: 25% Salaried workers: 70%</p> <p>Time Horizon: Data from pre-program year 2005, through 2010.</p>	<p>Intervention: Worksite wellness programs at sites with high intensity intervention and high support of local management within PPG Industries. Worksite wellness program focused on blood pressure, coronary artery disease, T2DM, depression, musculoskeletal disorders, and overweight. Interventions led by a multidisciplinary corporate steering committee of medical, health and safety, human resources, benefits, and communication representatives as well as a network of worksite wellness teams. Online system introduced to assess employees' health risk, anonymously, by individual and worksite. Behavioral elements of intervention included smoking cessation, physical activity, lower cholesterol and blood sugar, and self-monitoring blood pressure. Program included health</p>	<p>Intervention effects: High intensity sites achieved higher scores in BP control</p> <p>High intensity sites achieved higher scores in cholesterol control</p> <p>Measure Type: DiD</p>	<p>Intervention cost NR</p>	<p>Change in Healthcare Cost per patient per year: -\$123</p> <p>Components: Outpatient, inpatient, ED, medications</p> <p>Source: Claims data</p> <p>Measure Type: Pre to post trend</p> <p>Productivity: NR</p> <p>Quality: Fair</p>	<p>NR</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
		<p>promotion to modify risk behaviors, environmental support for healthy choices, annual health campaign with biometric screening.</p> <p>Comparison: Sites within PPG Industries with moderate intensity worksite programs</p>				
<p>Author (Year): Halladay et al. (2017)</p> <p>Design: Program cost evaluation from trial</p> <p>Economic Method: Intervention cost</p> <p>Funding Source: National Heart Lung and blood Institute</p> <p>Monetary Values: Reported in 2010 in U.S. dollars</p>	<p>Location: North Carolina, USA</p> <p>Setting: Primary care clinic</p> <p>Population: Patients in rural primary care practices where there is poor control of blood pressure at population level.</p> <p>Sample Size: Intervention: 1,238</p> <p>Characteristics: NR</p> <p>Time Horizon: Trial took place from 2010 through 2015.</p>	<p>Intervention: This is a pilot for team-based care for blood pressure control implemented within multiple primary care clinics across North Carolina. One objective was to determine whether team-based care could be implemented in rural economically distressed areas.</p> <p>Quality improvement activities throughout clinic for the general population with hypertension. These included generation of list of hypertensive patients and a quality improvement visit plan for providers to follow at each visit. Training provided to all staff. Patients with</p>	<p>No effectiveness estimates reported</p>	<p>Intervention cost per patient per year: \$54.70</p> <p>Components: Labor, training, and communication technology for development, implementation, and maintenance. Also include cost of home blood pressure monitors.</p> <p>Source: Tracked during implementation</p> <p>Quality: Good</p>	<p>Healthcare Cost: NR</p> <p>Productivity: NR</p>	<p>NR</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
		<p>uncontrolled hypertension received home blood pressure monitor and phone coaching to change behaviors and lifestyle. Blood pressure control was tracked through EHR. Phone coaching by external vendor.</p> <p>Comparison: None</p>				
<p>Author (Year): He et al. (2017) Linked to Augustovski et al. (2018)</p> <p>Design: RCT</p> <p>Economic Method: Intervention cost and healthcare cost</p> <p>Funding Source: National Institutes of Health</p> <p>Monetary Values: Reported in 2017 U.S. dollars</p>	<p>Location: Multiple locations, Argentina</p> <p>Setting: Primary care centers</p> <p>Population: Patients 21 years or older, living with uncontrolled BP, uninsured, and receiving primary care from the participating centers.</p> <p>Sample Size Intervention: 743 Control: 689</p> <p>Characteristics: Mean age: 55.8 years Female: 53% Diabetes: 34% HTN: 100% CVD: 12.7%</p> <p>Time Horizon: Study years 2013-2015.</p>	<p>Intervention: Community health worker-led multicomponent intervention with free home BP monitors. 60-min monthly home-visits for the first 6 months and bimonthly home visits for the remaining 18 months of follow-up. Individualized text-messages were also sent out weekly promoting lifestyle changes and reinforcing medication adherence. Training of PCP physicians focusing on standard treatment allocations, and weekly text messages to promote lifestyle changes and medication adherence sent out to participants.</p>	<p>Intervention effects: At 18 months, SBP reduced by 6.6 mmHg DBP reduced by 5.3 mmHg</p> <p>Source: Study records</p> <p>Measure Type: DiD</p>	<p>Intervention Cost per patient over 18 months: \$114.60</p> <p>Components: Salaries for program coordinators and community health workers, physician training, home visits, BP monitors, and eHealth platform programming.</p> <p>Source: Study records at each center</p> <p>Quality: Good</p>	<p>Healthcare cost per patient over 18 months: Intervention: \$62.20 Control: \$67.60 Difference: -\$5.40, not significant</p> <p>Components: Inpatient, outpatient, medications, labs</p> <p>Source: Primary care center and hospital data, patient questionnaire</p> <p>Measure Type: Post only</p> <p>Productivity: NR</p> <p>Quality: Fair</p>	<p>NR</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
	Intervention length 18 months.	Comparison: Usual care				
<p>Author (Year): Henke et al. (2011)</p> <p>Design: Retrospective cohort</p> <p>Economic Method: Intervention cost and healthcare cost</p> <p>Funding Source: None</p> <p>Monetary Values: Reported in 2009 U.S. dollars</p>	<p>Location: National, USA</p> <p>Setting: Worksite wellness</p> <p>Population: Employees of Johnson and Johnson aged 18-64 years old, continuously enrolled in a health care program offered by the company for at least one year. Employees with pregnancy-related medical care claims, employees not enrolled in prescription drug plan, or with no claims excluded from the sample during the year of the occurrence.</p> <p>Sample Size: Intervention: 31,823 Control: 31,823</p> <p>Characteristics: Mean age: 39.6 years Female: 45.2%</p> <p>Time Horizon: Analysis years 2002-2008. Ongoing program.</p>	<p>Intervention: Evaluation of Johnson and Johnson's (J&J) health and wellness program on employees' health risks and medical care costs in the third decade of the program's existence. Compared this data to data collected from employees of 16 comparable companies (some of which also have health and wellness programs).</p> <p>Comparison: Employees of propensity matched companies with or without worksite wellness programs.</p>	<p>Intervention effects: From 2005 through 2008, the predicted probability of individuals with high blood pressure decreased in the intervention group by 4.1 compared to no change in the control group.</p> <p>Source: Program and study records</p> <p>Measure Type: DiD</p>	<p>Intervention Cost per patient per year: \$300</p> <p>Components: On-site fitness centers, reimbursement for exercise expenditures, seasonal fitness challenges, nutrition (Weight Watchers, online weight management programs), lifestyle management (health coaching for blood pressure monitoring, tobacco cessation, blood lipid control), & chronic disease management costs.</p> <p>Source: Program records and enrollment data</p> <p>Quality: Good</p>	<p>Healthcare Cost saved per patient per year: \$565</p> <p>Components: Inpatient, outpatient, medication</p> <p>Source: Self-insured company records</p> <p>Measure Type: DiD</p> <p>Productivity: NR</p> <p>Quality: Fair</p>	<p>Intervention cost plus healthcare cost averted per patient per year: -\$265</p> <p>Quality: Fair</p> <p>Limitation: No clinical outcomes reported except at-risk of hypertension. The experience of Johnson & Johnson, a company with a very mature program, thus was contrasted with that of companies that may have only recently introduced wellness programs and, in some cases, may have fashioned their programs after Johnson & Johnson's.</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Author (Year): Hollenbeak et al. (2014)</p> <p>Design: Modeled from RCT</p> <p>Economic Method: Intervention cost; healthcare cost; cost per QALY gained</p> <p>Funding Source: Robert Wood Johnson Foundation, Pfizer</p> <p>Monetary Values: Reported in 2010 U.S. dollars</p>	<p>Location: NR, USA</p> <p>Setting: Primary care clinic</p> <p>Population: African American patients with treated but uncontrolled BP from registry within 2 practices. Ages 40 to 75 years. Required moderate visit adherence and recent lipid panel.</p> <p>Sample Size: Intervention: 136 Control: 144</p> <p>Characteristics: Mean Age: 61 years Female: 70% African American: 100% Mean SBP: 141 Mean DBP: 81 Mean LDL: 116 T2DM: 56%</p> <p>Time Horizon: Intervention length was 6 months. Modeled over 10 years.</p>	<p>Intervention: Healthy Heart Trial</p> <p>African American peer coaches (CHW) nominated by physicians from patient panel and trained by study staff. CHWs' objective was to engage patients with education about heart disease, risks, and barriers to control or risk factors. CHWs contacted patients every other month for 6 months. Patients received practice-based counseling from two African American medical assistants trained with same materials as CHWs, and in use of computer-based 4-year coronary heart disease risk assessor. Educational brochures and healthy recipes were provided.</p> <p>Comparison: Usual care with education materials</p>	<p>Intervention effects: SBP reduced 6.4 mmHg versus control</p> <p>Source: Trial records</p> <p>Measure Type: DiD</p> <p>10-year QALY gained: 0.14</p> <p>Source: Modeled</p> <p>Measure Type: DiD</p> <p>Quality: Good</p>	<p>Intervention cost per person per year: \$722</p> <p>Components: Labor, training</p> <p>Source: Trial records</p> <p>Quality: Good</p>	<p>Change in healthcare cost: NR</p> <p>Productivity: NR</p>	<p>Net cost per patient over 10 years: \$1,741</p> <p>Quality: Good</p> <p>Net cost per QALY gained over 10 years: \$10,866</p> <p>Quality: Good</p>
<p>Author (Year): Hong et al. (2018)</p>	<p>Location: Baltimore, Maryland, USA</p>	<p>Intervention: RED CHIP-Reducing Disparities and</p>	<p>Intervention effects: From trials</p>	<p>Intervention Cost per patient per year: \$375</p>	<p>Healthcare Cost: NR</p>	<p>15-year cost per QALY gained: \$52,850</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Design: Modeled cost per QALY from Quasi-experiment</p> <p>Economic Method: Cost per QALY</p> <p>Funding Source: NR</p> <p>Monetary Values: Reported in 2016 U.S. dollars</p>	<p>Setting: Primary care clinics</p> <p>Population: Telephone recruited of those identified in EMR or from provider referrals at routine clinic visit.</p> <p>Sample Size Intervention: 629 Control: 330</p> <p>Characteristics: Mean Age: 60 years Female: 58% White: 30% African American: 70% Mean SBP: 148 Mean DBP: 86 Mean Total Cholesterol: 200</p> <p>Time Horizon: Trials ran from 2012 through 2015. 15-year model.</p>	<p>Controlling Hypertension in Primary Care. Dieticians and pharmacists with physicians targeted self-management behaviors in diet, physical activity, medication adherence, and self-monitoring. In person in primary care clinics.</p> <p>3 sessions 4 weeks apart for total of 120 minutes. In the trial, 629 patients attended at least 1 session and 245 (39%) completed all 3 sessions.</p> <p>Comparison: Usual care</p>	<p>SBP reduced 9 mmHg DBP reduced 4 mmHg</p> <p>15-year QALY Intervention: 7.09 Control: 7.05 Difference: 0.05</p> <p>Source: Clinical indicators from trials. QALY from EQ-5D. Events modeled are CHD death, nonfatal myocardial infarction (MI), fatal stroke, and nonfatal stroke</p> <p>Measure Type: Modeled and from trials</p> <p>Quality: Fair</p>	<p>Components: Fixed costs \$3,189, training for social determinants and cultural competency \$7,500, training for motivational interviewing \$369, salaries registered dietitians (3 full-time) \$165,000, Doctor of pharmacy (0.5 full-time) \$60,000</p> <p>Source: Trial records</p> <p>Quality: Good</p>	<p>Included in modeled total cost</p> <p>Productivity: NR</p>	<p>90% certainty with threshold at \$100K and 40% certainty with threshold at \$50K.</p> <p>If population was 90% African American, \$48,250/QALY. More cost-effective for older population.</p> <p>Quality: Fair</p>
<p>Author (Year): Houle et al. (2012)</p> <p>Design: Model based on RCTs</p> <p>Economic Method:</p>	<p>Location: Multiple regions, Canada</p> <p>Setting: Various settings from Blood Pressure Lowering Treatment Trialists' Collaboration (BPLTTC)</p>	<p>Intervention: Main trial was SCRIPT-HTN. Delivered by pharmacist-nurse teams at various pharmacy sites. Cardiovascular risk reduction counseling was provided by a nurse-pharmacist team using a hypertension education</p>	<p>Intervention effects: SBP reduction 5.6 mmHg used for model DBP reduction -2.1 mmHg</p>	<p>Intervention Cost per patient per year: \$150.48</p> <p>Components: Pharmacist cost</p> <p>Source:</p>	<p>Change in healthcare cost per patient per year: \$221</p> <p>Components: Inpatient</p> <p>Source:</p>	<p>Intervention cost + change in healthcare cost per patient per year: \$70.52</p> <p>Quality: Fair</p> <p>Limitations:</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Intervention cost and healthcare cost</p> <p>Funding Source: Canadian Institutes of Health Research Frederick Banting and Charles Best Graduate Scholarship, and the Interdisciplinary Chronic Disease Collaboration funded by Alberta Innovates-Health Solutions</p> <p>Monetary Values: Reported in 2011 Canadian dollars</p>	<p>Population: NR</p> <p>Sample Size Intervention: 115 Control: 112</p> <p>Characteristics: Mean age: 66.2 years Female: 34.8% CVD: 20% T2DM: 100% Dyslipidemia: 55% HTN: 100% CKD: 16.5% Mean SBP: 142.5 Mean DBP: 76.4</p> <p>Time Horizon: Modeled. Assumed 6-month intervention effect</p>	<p>brochure and counseling for reviewing BP as a risk factor, causes of high BP, importance, and consequences of high BP, explaining the effect of diabetes on high BP, and lifestyle strategies to improve BP. Meeting with physician encouraged and facilitated by pharmacist-nurse team with summary assessment and faxed information to physician. Patients seen at 6-week intervals.</p> <p>Comparison: Usual care</p>	<p>SBP reduction modeled out to stroke, myocardial infarction, heart failure, hospitalization. Events based on 8 trials that had those outcomes and associated reductions in SBP.</p> <p>Source: Multiple trials that achieved reduction in SBP and their recorded events. Modeled and based on trials.</p> <p>Measure Type: DiD</p>	<p>Adapted from US study for Canadian context.</p> <p>Quality: Fair</p>	<p>Cost of events modeled after reduction in SBP achieved in the SCRIPT-HTN trial. Events based on 8 trials that had those outcomes and associated reductions in SBP.</p> <p>Measure Type: Modeled</p> <p>Productivity: NR</p> <p>Quality: Fair</p>	<p>Only inpatient healthcare cost considered</p>
<p>Author (Year): Iles et al. (2014)</p> <p>Design: Pre-post with control</p> <p>Economic Method: Intervention cost</p>	<p>Location: Queensland and Victoria, Australia</p> <p>Setting: Primary care</p> <p>Population: Patients age ≥ 18 years from 3 general practices with one or more stable chronic</p>	<p>Intervention: Practice nurse (PN)-led care for individuals who had one of the three chronic conditions. All PNs in the study were registered nurses working within their scope of practice and not under the direct supervision of GP. Worked from protocols in</p>	<p>No clinical outcomes reported.</p>	<p>Intervention Cost per patient per year: \$128</p> <p>Components: Practice nurse</p> <p>Source: Claims data</p> <p>Measure Type: Incremental</p>	<p>Change in healthcare cost per patient per year: NR</p> <p>Productivity: NR</p>	<p>NR</p> <p>Limitations: No clinical or effectiveness outcomes reported.</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Funding Source: Australian Research Council Discovery Grant</p> <p>Monetary Values: Reported in 2009 Australian dollars</p>	<p>diseases among T2DM, ischemic heart disease, or HTN.</p> <p>Sample Size: Study years 2008-2009. Intervention: 120 Control: 134</p> <p>Characteristics: Mean age: 68.5 years Female: 49% CVD: 26% T2DM: 29% HTN: 45%</p> <p>Time Horizon: Intervention length 12 months</p>	<p>a collaborative practice model. If patients in the PN-led care group became unstable, they could be referred to GP care until their disease stabilized and then return to PN-led care.</p> <p>Comparison: Usual care</p>		<p>Quality: Fair</p>		
<p>Author (Year): Isetts et al. (2012)</p> <p>Design: Pre post with control</p> <p>Economic Method: Healthcare cost</p> <p>Funding Source: Allina Health Systems Innovation and University of Minnesota</p>	<p>Location: Minneapolis-St. Paul, Minnesota, USA</p> <p>Setting: Primary care clinics</p> <p>Population: Patients in pilot CMI clinics with chronic diseases. Focus of effectiveness is diabetes.</p> <p>Sample Size Intervention: 823 patients in 4 clinics Control: 38 clinics</p> <p>Characteristics:</p>	<p>Intervention: Pilot Care Model Innovation (CMI) for shared savings contract with payer. Medication Therapy Management (MTM) with team-based patient-centered approach to medication use. Help patients achieve desired treatment goals and resolve drug related problems impeding progress to goals. Care teams consist of physicians, nurses, pharmacists, diabetes educators, dieticians,</p>	<p>Intervention effects: For CMI patients receiving MTM services: Mean of 2.13 MTM encounters. 4135 drug therapy problems resolved composed of: adherence 20%; unnecessary drug 5%; additional or different drug</p>	<p>Intervention Cost: NR Included in healthcare cost estimate</p>	<p>Change in median healthcare cost per patient per month: From Dec 2008 to March 2010 CMI Clinics: \$341 to \$354 Control: \$366 to \$420 Difference: -\$41</p> <p>Components: NR</p> <p>Source: NR</p> <p>Measure Type: Pre to post</p>	<p>NR</p> <p>Author Notes: Favorable cost outcomes and favorable outcomes for cost sharing contracts in the ACO from CMI pilot caused Fairview Health Services to expand CMI to other 38 clinics.</p> <p>Limitations: No details of clinical outcomes</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Monetary Values: Reported in 2009 U.S. dollars</p>	<p>Age range 15 to 88 years Female: 60% Mean number medical conditions: 6.4 Most common conditions were HTN, dyslipidemia, and diabetes.</p> <p>Time Horizon: Pilot funding began in 2009. Healthcare cost assessed from Dec 2008 through March 2010.</p>	<p>and health coaches. Organized as accountable care organization (ACO). Pharmacist provided MTM consultations, in-person visits, telephone, home visits, or co-visits, conferences to discuss patients not at goal. Collaborative practice agreements for care of patients.</p> <p>Comparison: Usual care in other system clinics</p>	<p>28.5%; dose change 38%; drug reaction 8%. Benchmarks for Diabetes Care: Patients meeting 5 performance benchmarks compared to statewide group (5- year period): increased from 6% to 17.5%</p> <p>Source: Minnesota Community Measurement Program and pilot program data.</p> <p>Measure Type: Pre to post</p>		<p>Productivity: NR</p> <p>Quality: Fair</p>	
<p>Author (Year): Katon et al. (2012)</p> <p>Design: RCT</p> <p>Economic Method: Cost per QALY gained</p>	<p>Location: Washington, USA</p> <p>Setting: Primary care</p> <p>Population: Recruited from 14 primary care practices in Group Health. Patients with diabetes, CHD, or both. One or more of</p>	<p>Intervention: TEAMCare Based on collaborative care for depression, chronic care model, and treat-to-target medication strategy for diabetes. Physician-supervised nurse care manager (NCM) enhance patient self-management, treatment</p>	<p>Intervention effects: SBP change 12-month: -3.4 mmHg 24-month: -1.1 mmHg</p> <p>LDL change 12-month: -9.1 24-month: -0.6</p>	<p>Cost per patient per year: \$1,224</p> <p>Components: Wages, outreach, administration, recordkeeping, information systems. Physician supervision fixed</p>	<p>Healthcare cost change per patient per year: \$440</p> <p>Components: Inpatient, outpatient</p> <p>Source: Health plan data</p>	<p>Cost per QALY gained over 24 months: \$1,881</p> <p>Quality: Good</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Funding Source: No external funds</p> <p>Monetary Values: Reported in 2009 U.S. dollars</p>	<p>HbA1c ≥8.5%, SBP >140 mm Hg, or LDL-C level >130 mg/dL. Depression score of at least 10 on the Patient Health Questionnaire.</p> <p>Sample Size: Intervention: 106 Control: 108</p> <p>Characteristics: Mean Age: 57.4 years Female: 48% Depression: 100% CHD: 23% T2DM: 89% Mean SBP: 136 Mean LDL: 106.5 Mean A1c: 8.1 White: 75% Some college: 61% Unemployed: 10%</p> <p>Time Horizon: Recruited May 1, 2007 through October 31, 2008. Intervention length 12 months.</p>	<p>intensification, coordination, and continuity of care. NCM worked closely with each patient’s PCP. Collaborative goal setting and individualized care plans. Patients educated about SMBP, adherence to medication, diet, and exercise regimens. NCM tracked progress electronic information system and reviewed their caseloads weekly with a consulting psychiatrist and internist or family physician. Telephone calls every 4 to 6 weeks. More frequent contacts or visits for not at target or relapses.</p> <p>Comparison: Usual care</p>	<p>A1c change 12-month: -0.56 24-month: -0.14</p> <p>Depression SCL-20 score 12-month: -0.41 24-month: -0.24</p> <p>Depression-free days increased 114 over 24 months</p> <p>QALY increase 0.335 over 24 months</p> <p>Source: Study records</p> <p>Measure Type: DiD</p> <p>Quality: Good</p>	<p>cost of \$100 per patient.</p> <p>Source: Health plan cost accounting system.</p> <p>Quality: Good</p>	<p>Measure Type: DiD</p> <p>Productivity: NR</p> <p>Quality: Good</p>	
<p>Author (Year): Kulchaitanaroaj et al. (2014)</p> <p>Design: 2 RCTs</p> <p>Economic Method: Intervention cost</p>	<p>Location: Multiple Cities, Iowa, USA</p> <p>Setting: Primary care</p> <p>Population: Patients age ≥ 21 y with diagnosis of essential hypertension</p>	<p>Intervention: Two clinical trials (Trial A and B) implementing physician-pharmacist collaborative interventions compared with usual care over six months in community-based medical offices in the Midwest, U.S. Trials</p>	<p>Intervention effects: Change in SBP Trial A: -15.38 Trial B: -10.8</p> <p>Change in DBP Trial A: 4.52 Trial B: -5.09</p>	<p>Incremental cost per patient over 6 months: Trial A: \$281.87 Trial B: \$261.71</p> <p>Components: Counseling sessions, additional hypertension</p>	<p>Change in healthcare cost: NR</p> <p>Productivity: NR</p>	<p>NR</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Funding Source: NR</p> <p>Monetary Values: Reported in 2013 U.S. dollars</p>	<p>Sample Size: Trial A Intervention: 101 Control: 78 Trial B Intervention: 252 Control: 244</p> <p>Characteristics: Mean Age Trial A: 59.8 years Trial B: 58.6 years Female Trial A: 57% Trial B: 65% White Trial A: 88.3% Trial B: 90.5% Mean SBP Trial A: 152.4 Trial B: 154.1 Mean DBP Trial A: 85 Trial B: 87</p> <p>Time Horizon: Trial A was 9 months and Trial B was 6 months.</p>	<p>involved clinical pharmacists who were faculty members in medical offices. They collaborated with primary care physicians to offer counseling sessions dealing with lifestyle modifications for individuals with hypertension and offer medication advice. For trial A - 2 pharmacists visits and 1 phone call. Trial B - 4 pharmacist visits. For both trials, physician visits were scheduled on pharmacists' discretion.</p> <p>Comparison: Usual care</p>	<p>Source: From trials.</p> <p>Measure Type: DiD</p>	<p>medications/change of current hypertension medication.</p> <p>Source: Records from trials</p> <p>Quality: Fair</p>		
<p>Author (Year): Kulchaitanaroaj et al. (2017) Linked to Carter et al. 2008 and Carter et al. 2009</p> <p>Design: RCTs</p>	<p>Location: Midwest, USA</p> <p>Setting: Modeled for primary care setting</p> <p>Population: Patients for cohort model drawn from RCTs</p>	<p>Intervention: Team-based care co-led by pharmacists and Primary Care Providers (PCPs) located in same clinics. Pharmacist recommendations to PCP to address suboptimal therapy in face-to-face</p>	<p>Intervention effects: Effects from RCTs: authors note success of trial, including BP reduction, was due to initiation or dosage change</p>	<p>Incremental cost per patient: \$329.15</p> <p>Components: Pharmacist time, PCP time, specialist time, in collaboration</p>	<p>Incremental modeled lifetime total healthcare plus intervention cost per patient: \$3817.54</p> <p>Components: Modeled substantially cost of CVD events. Inpatient,</p>	<p>Cost per QALY gained Lifetime: \$26,808 5-year: \$78,547 10-year: \$39,085</p> <p>Intervention was cost-effective based on willingness to pay</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Economic Method: Cost per QALY gained</p> <p>Funding Source: No external funds</p> <p>Monetary Values: Reported in 2015 U.S. dollars</p>	<p>Sample Size: Cohort model based on 399 patients from RCTs</p> <p>Characteristics: Mean Age: 56.7 years With CVD: 11.3% Mean SBP 151.4 Mean DBP: 86.9 White: 86% Female: 57.4%</p> <p>Time Horizon: Original RCTs were 6 and 9 months. Modeled over lifetime.</p>	<p>interactions, phone calls, or written communication. Pharmacist counseled patients on medication and lifestyle.</p> <p>Comparison: Usual PCP care</p>	<p>for hypertensive medications. Main modeled RCT outcome: SBP reduction at 6 months: 6.8 mmHg for control and 18.8 mmHg for intervention.</p> <p>Mean QALY increased 0.14.</p> <p>Source: Modeled outcomes were Acute Coronary Syndrome (ACS), heart failure, stroke, death. Utility weights associated with CVD events based on EQ-5D for U.S. communities and MEPS data.</p> <p>Measure Type: DiD</p> <p>Quality: Good</p>	<p>activities, overheads</p> <p>Source: Records from two RCTs</p> <p>Quality: Good</p>	<p>ED, outpatient, medications, nursing home care, home care.</p> <p>Source: Modeled CVD events. HCUP data, Medicare/Medicaid fees, and published studies for unit prices</p> <p>Measure Type: DiD</p> <p>Productivity: NR</p> <p>Quality: Good</p>	<p>of \$50K to \$100K 48.6% of the time under multivariable sensitivity analysis.</p> <p>Sensitivity Analysis: Different profiles of patient cohorts in terms of CVD risks such as BMI and cholesterol. Worst case scenario where SBP reduction maintained only for 24 months.</p> <p>Cost per QALY lower for higher risk patients.</p> <p>Quality: Good</p>
<p>Author (Year): Monahan et al. (2019)</p> <p>Design:</p>	<p>Location: Multiple locations in England, UK</p> <p>Setting:</p>	<p>Intervention: TASMIN4. Physician titration of hypertension medication based on SMBP readings in one</p>	<p>Intervention effects: Change in SBP SMBP: -3.5</p>	<p>Cost over 6 months per patient: SMBP: £57</p>	<p>Healthcare cost per patient over 6-month: NR</p>	<p>Cost per QALY gained over lifetime: SMBP vs Usual: £3,035 (cost £124</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Modeled from RCT</p> <p>Economic Method: Modeled cost per QALY</p> <p>Funding Source: National Institute for Health Research</p> <p>Monetary Values: Reported in 2016 UK pounds</p>	<p>Primary care</p> <p>Population: Patients from 138 general practices. Selected patients age >35 years, with a clinic BP >140/90 mm Hg and willing to self-monitor BP.</p> <p>Sample Size: SMBP: 395 Telemonitoring: 393 Control: 394</p> <p>Characteristics: Mean age: 67 years Female: 46% to 47% White: 95% Black: 2% Asian: 2% HTN: 100% T2DM: 9% to 10% CVD: <5%</p> <p>Time Horizon: Study years 2014-2015. Intervention length 12 months.</p>	<p>arm, SMBP readings plus telemonitoring in second arm, and based on clinic BP measurements in usual care arm. Only additional team member is nurse who trained patients on use of SMBP (15 minutes) and use of telemonitoring (25 minutes) based on SMS and a web-based telemonitoring server for BP readings entry. Telemonitoring send readings via free SMS text with web-based data entry back-up. Clinicians review both self-monitoring and telemonitoring groups' monthly readings. Physician used clinic readings in usual care arm. Telemonitoring SMS included alerts, warnings, reminders for readings not at goal.</p> <p>Comparison: Usual care with clinic BP readings.</p>	<p>Telemonitoring: -4.7</p> <p>Change in DBP SMBP; -1.5</p> <p>Telemonitoring: -1.3</p> <p>Source: Trial records</p> <p>Measure Type: DiD</p>	<p>Telemonitoring: £71 Usual care: £49</p> <p>Components: Nurse time, BP monitor and telemonitoring equipment</p> <p>Source: Study records</p> <p>Quality: Good</p>	<p>Healthcare cost included in cost component of cost per QALY gained.</p> <p>Components: All cost components</p> <p>Source: National Health Service tariffs and modeled events.</p> <p>Measure Type: Modeled</p> <p>Productivity: NR</p> <p>Quality: NA</p>	<p>and QALY 0.0407)</p> <p>Telemonitoring v SMBP: £17,424 (cost £302 QALY 0.0173).</p> <p>Cost per QALY gained over 10 years: SMBP v Usual: £9,130 (cost £85 and QALY 0.0093) Telemonitoring v SMBP: £46,793 (cost £188 QALY 0.0040)</p> <p>Quality: Good</p>
<p>Author (Year): Overwyk et al. (2019)</p> <p>Design: Model based on RCTs</p>	<p>Location: National, USA</p> <p>Setting: Primary care</p> <p>Population: Hypothetical individuals 35 years</p>	<p>Intervention: Pharmacist involved team-based care intervention among 3 targeted groups using a microsimulation model designed to estimate cardiovascular event</p>	<p>Intervention effects: Change in SBP: -8.5 mmHg</p> <p>Change in LDL: -8.1 mg/dL</p>	<p>Intervention Cost per patient per year: \$525</p> <p>Components: Pharmacist and physician time</p>	<p>Healthcare cost per patient over 6-month: NR</p> <p>Included in total cost estimate</p>	<p>5-year Intervention Cost + Change in Healthcare Cost Group 1: \$322 Group 2: \$156 Group 3: \$141</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Economic Method: Intervention cost and healthcare cost</p> <p>Funding Source: Centers for Disease Control and Prevention</p> <p>Monetary Values: Reported in 2012 U.S. dollars</p>	<p>old or older who were divided into three groups depending on their status: Group 1 (newly diagnosed hypertension), Group 2 (persistently uncontrolled blood pressure), Group 3 (treated, but persistently uncontrolled blood pressure).</p> <p>Sample Size: Modeled</p> <p>Characteristics Group 1, Group 2, Group 3 Mean age: NR Female: 52.5%, 57.6%, 58.6% HTN: 100% in all 3 groups CVD: 15.7%, 20%, 20.9% T2DM: 23.1%, 26.5%, 26.6% Medicare: 30.5%, 44.4%, 47.2% Commercial Insurance: 47.4%, 37.8%, 35.9% Mean SBP: 145.3, 153.4, 152.8 Mean LDL: 120.6, 120.4, 119.3</p> <p>Time Horizon: Modeled for 5- and 10-year horizon.</p>	<p>incidence and associated health care spending in a cross-section of individuals representative of the U.S. population.</p> <p>The intervention was assumed to be on average a 1-hour long intake visit, three 15-minute in-person visits, and eight 15-minute phone visits over 1 year. The total time measured was over 5 years.</p> <p>Comparison: Usual care</p>	<p>Source: Study records</p> <p>Measure Type: Modeled</p>	<p>Source: Model input from Dehmer 2016</p> <p>Quality: Good</p>	<p>Components: All components of healthcare cost associated with CVD and CVD events</p> <p>Source: Modeled based on literature for unit prices.</p> <p>Measure Type: Modeled</p> <p>Productivity: NR</p> <p>Quality: NA</p>	<p>Limitations: Short duration</p> <p>Quality: Fair</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Author (Year): Panattoni et al. (2018)</p> <p>Design: Program cost evaluation from pilot</p> <p>Economic Method: Intervention cost</p> <p>Funding Source: Gordon and Betty Moore Foundation, Palo Alto Medical Foundation</p> <p>Monetary Values: Reported in 2014 in U.S. dollars</p>	<p>Location: Palo Alto, California, USA</p> <p>Setting: Primary care clinic</p> <p>Population: All patients with hypertension or T2DM.</p> <p>Sample Size: Intervention: 11,873 patients with hypertension or T2DM</p> <p>Characteristics: Mean age: 58 years Female: 48% White: 24% Asian: 32% Hispanic: 7% Other or Unknown racial/ethnic group: 37% Medicare: 28% Commercial insurance: 70%</p> <p>Time Horizon: Planning began in 2010; team-based care pilot completed after 29 months.</p>	<p>Intervention: Team-based care for chronic disease implemented as a pilot in a family and internal medicine primary care clinic. Part of multispecialty medical foundation. Staff included physicians, medical assistants, one pharmacist, one nurse practitioner, and two health coaches. Coaches contacted patients with poor A1c or blood pressure control who had not visited a physician within the past three months to schedule an appointment with physician. Physicians referred selected patients to a health coaches for self-management support or pharmacist for medication management.</p> <p>Comparison: None</p>	<p>No effectiveness estimates reported</p>	<p>Intervention cost per patient per year: \$194</p> <p>Components: Labor</p> <p>Source: Tracked during implementation</p> <p>Quality: Fair</p>	<p>Healthcare Cost: NR</p> <p>Productivity: NR</p>	<p>NR</p>
<p>Author (Year): Polgreen et al. (2015)</p>	<p>Location: National, USA</p> <p>Setting:</p>	<p>Intervention: Collaboration Among Pharmacist and Physicians to Improve</p>	<p>Intervention Effects:</p>	<p>Intervention cost per patient per year: \$203</p>	<p>Healthcare Cost: NR</p> <p>Productivity:</p>	<p>NR</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Design: RCT</p> <p>Economic Method: Intervention cost</p> <p>Funding Source: National Heart Lung and Blood Institute</p> <p>Monetary Values: Reported in 2013 in U.S. Dollars.</p>	<p>Primary care clinic</p> <p>Population: All patients age ≥ 18 years with uncontrolled hypertension who speak English or Spanish</p> <p>Sample Size: Intervention: 401 Control: 224</p> <p>Characteristics: Mean age: 61 years Female: 60% African American: 38% Hispanic: 14% Mean SBP: 148.9 Mean DBP: 85.1 Annual income <\$25,000: 49%</p> <p>Time Horizon: Intervention duration was 9 months</p>	<p>Outcomes Now (CAPTION). Study staff identified patients with uncontrolled hypertension. Pharmacist reviewed medical record and followed up with in-person interview to collect information about patients’ medication history, knowledge about blood pressure, medication use, barriers to care, and lifestyle. Pharmacists made follow up calls at 4, 6, and 8 weeks to address barriers to care, manage medications, and suggest lifestyle modifications. Pharmacist-physician communications were face to face. Physicians reviewed and accepted, modified, or rejected pharmacist recommendations.</p> <p>Comparison: Usual care</p>	<p>Change in SBP: -6.1 mmHg</p> <p>Change in DBP: -2.9 mmHg</p>	<p>Components: Labor, medications</p> <p>Source: Trial records and average compensation for pharmacists; external survey for physician time. Drug cost based on average wholesale prices.</p> <p>Quality: Fair</p>	<p>NR</p>	
<p>Author (Year): Prezio et al. (2014)</p> <p>Design: Modeled from RCT</p> <p>Economic Method:</p>	<p>Location: Dallas, Texas, USA</p> <p>Setting: Primary care center</p> <p>Population: Selected diabetes patients in existing program for diabetes</p>	<p>Intervention: CoDE Certified and trained <i>promotoras</i> helped patients self-manage their disease with individual case management under direct physician supervision. Glucose</p>	<p>Intervention effects: Change in A1c Relative change: 23.3% reduction in intervention and 13.5%</p>	<p>Intervention Cost per patient per year: First year \$435 Subsequent years \$316</p> <p>Components: <i>Promotora</i> salary, home glucose</p>	<p>Healthcare cost per patient over 6-month: NR</p> <p>Included in total cost estimate</p> <p>Components: All components</p>	<p>Cost per QALY gained 20-year: \$355 10-year: \$38,726 5-year: \$100,195</p> <p>Net 20-year cost: \$6,328</p> <p>Quality:</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Modeled cost per QALY</p> <p>Funding Source: University of Texas, Faith-Health Research-Dallas</p> <p>Monetary Values: Reported in 2012 U.S. dollars</p>	<p>care in primary care center</p> <p>Sample Size: Intervention: 90 Control: 90 (waitlist)</p> <p>Characteristics: Mean age: 47 years Female: 67% Hispanic: 78% African American: 15% Asian: 1% Uninsured: 100% T2DM: 99% Mean SBP: 126 Mean DBP: 78 Mean LDL: 110-5 Mean A1c: 9.5</p> <p>Time Horizon: Recruitment for RCT started July 2003 and RCT completed in 2006. Intervention length was 12 months and quarterly assessments indefinitely.</p>	<p>monitor and testing strips provided at no charge and patients were trained on use. Food diary with instructions provided. Educated on individualized meal plans and healthy meal preparation. Physician notified if following 3 abnormal glucose readings. <i>Promotora</i> did full foot examination. Educated on lifestyle modifications. Medication changes made by the primary care provider.</p> <p>Comparison: Waitlist</p>	<p>reduction in control</p> <p>Source: From trial data</p> <p>Measure Type: DiD</p>	<p>monitors and strips, physician time including supervision, and patient time</p> <p>Source: Trial records</p> <p>Quality: Fair</p>	<p>Source: Modeled from reduction in A1c</p> <p>Measure Type: Modeled</p> <p>Productivity: NR</p> <p>Quality: NA</p>	<p>Fair</p>
<p>Author (Year): Reiss-Brennan et al. (2016)</p> <p>Design: Longitudinal</p> <p>Economic Method: Intervention cost</p>	<p>Location: Utah and other states, USA</p> <p>Setting: Primary care clinics of large health system</p> <p>Population: Patients age ≥ 18 years with at least 1 outpatient visit</p>	<p>Intervention: Intermountain Mental Health Integration (MHI) program.</p> <p>Team-based care integrating mental and physical health was implemented in some clinics in the</p>	<p>Intervention effects: Odds ratio for BP control: 0.87</p> <p>Odds ratio for quality of diabetes care: 1.26</p>	<p>Intervention Cost per patient per year: \$192</p> <p>Components: Labor, communication infrastructure</p> <p>Source:</p>	<p>Change in healthcare cost: -\$115</p> <p>Components: Inpatient, outpatient, laboratory, radiology</p> <p>Source:</p>	<p>NR</p> <p>Authors state investment costs were less than reduction in payments received by the delivery system. Outcomes. No</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>and healthcare cost</p> <p>Funding Source: Intermountain Healthcare</p> <p>Monetary Values: Assumed reported in 2012 U.S. dollars.</p>	<p>in 2003-2005 and at least 1 visit per year in any healthcare service until 2013</p> <p>Sample Size Intervention: 63,396</p> <p>Characteristics: Female: 62% White: 94%</p> <p>Time Horizon: Baseline between 2003 and 2005. Outcomes assessed between 2010 and 2013.</p>	<p>Intermountain Health system. These clinics were classified and recognized as providing team-based care according to an MHI scorecard for MHI care process model. Interdisciplinary clinical teams organized around primary care physician. Standardized process and care and communication organized in common electronic medical record. Outcomes assessed through disease-specific registries. Patient-centered care with community outreach were followed.</p> <p>Comparison: Patients in clinics without MHI</p>	<p>Source: Electronic health records and data from disease registries</p> <p>Measure Type: Post only with comparison</p>	<p>Trial records</p> <p>Quality: Fair</p>	<p>Health system claims data</p> <p>Measure Type: Pre to post</p> <p>Productivity: NR</p> <p>Quality: Good</p>	<p>estimates provided.</p> <p>Notes: Unclear whether change in healthcare cost is per patient per year or event.</p>
<p>Author (Year): Shireman et al. (2016)</p> <p>Design: RCT</p> <p>Economic Method: Intervention cost and partial healthcare cost</p>	<p>Location: Wisconsin, USA</p> <p>Setting: Community pharmacies</p> <p>Population: African American age ≥ 18 y taking at least 1 HTN medication and found to have uncontrolled BP using</p>	<p>Intervention: Team Education and Adherence Monitoring (TEAM) staffed by community pharmacists, pharmacy technicians, with tools for monitoring and improving medication adherence, with feedback to patients and physicians. Invited to baseline and 5 follow-</p>	<p>Intervention effects: Effect measured at 6 months after end of intervention. Change in SBP/DBP: -5.6/- 2.2 Change in % with BP Control: 17.1 pct pt</p>	<p>Cost over 6 months per patient: Total \$104.8 made up of staff time (\$90.06) and tools and supplies (\$14.74)</p> <p>Components: Staff time, tools, and supplies</p>	<p>Healthcare cost per patient over 6-month: \$85.80</p> <p>Components: HTN Medication</p> <p>Source: Retrospective analysis of pharmacy claims and</p>	<p>Labor cost of additional patient achieving BP control: \$665</p> <p>Quality: Limited</p> <p>Limitations: Short duration</p>

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<p>Funding Source: National Heart, Lung, and Blood Institute (NHLBI)</p> <p>Monetary Values: Reported in 2007 U.S. dollars</p>	<p>free screening at pharmacy. From 5 Wisconsin cities. Pharmacies were randomized.</p> <p>Sample Size: Intervention: 276 Control: 300</p> <p>Characteristics: Mean age: 54 years Male: 38% African American: 100% T2DM: 25% Less than High School: 24% Household income less than \$20K: 45% Mean SBP 151 Mean DBP: 92 Uncontrolled BP: 100% Missed \geq 1 dose last week: 25%</p> <p>Time Horizon: Enrollment December 2006 – August 2007. Intervention length 6 months.</p>	<p>up visits with pharmacist. Pharmacist followed algorithms to address barriers and checklists to track barriers. Technicians performed administrative and record-keeping tasks. One pharmacist and one technician from each pharmacy received training (1-hour self-study and 7-hour joint workshop).</p> <p>Comparison: Usual care with 14-page guide on HTN, pamphlet on HTN in African Americans, cards to record BP at baseline and follow-up.</p>	<p>Change in adherence: 23.6 (based on proportion of days covered \geq80%)</p> <p>Source: Trial records</p> <p>Measure Type: DiD</p>	<p>Source: Study and per patient meeting records. Wisconsin wages for personnel time.</p> <p>Quality: Good</p>	<p>fills. Valued using Red Book.</p> <p>Measure Type: Post intervention v control</p> <p>Productivity: NR</p> <p>Other Healthcare Utilization: Study found no substantial difference in utilization of inpatient, specialist/PCP visits, ED visits.</p> <p>Quality: Limited</p>	
<p>Author (Year): Siaw et al. (2017)</p> <p>Design: RCT</p>	<p>Location: Singapore, Singapore</p> <p>Setting: Outpatient healthcare institutions</p>	<p>Intervention: Multidisciplinary collaborative approach to patient care. For management of Asian patients with type 2 diabetes.</p>	<p>Intervention effects: Change in SBP: -3.8 mmHg</p> <p>Change in A1c: -0.5</p>	<p>Intervention Cost NR</p> <p>Included in healthcare cost estimate</p>	<p>Change in Healthcare Cost plus Intervention Cost over 6-months: Intervention: \$516.77 Control: \$607.78 Difference: -\$91.01</p>	<p>NR</p> <p>Limitation: No inpatient cost estimate</p>

Study Information	Study and Population Characteristics	Trial Name Intervention & Comparison	Effectiveness	Intervention Costs	Healthcare Cost Averted Productivity Loss Averted	Cost-effectiveness, Cost-benefit, Net Cost, or ROI
<p>Economic Method: Intervention cost and healthcare cost</p> <p>Funding Source: NR</p> <p>Monetary Values: Reported in 2014 U.S. dollars</p>	<p>Population: Recruited adult patients aged > 21 years with uncontrolled type 2 diabetes (HbA1C >7%); on 5 or more chronic medications; and comorbidities.</p> <p>Sample Size: Intervention: 214 Control: 197</p> <p>Characteristics: Mean age: 59.2 years Female: 47.7% Chinese: 58.9% Malay: 19.2% Indian: 20.6% Less than High School: 39.2% T2DM: 100% Mean A1c: 8.6% Mean SBP: 129.2</p> <p>Time Horizon: Study dates not reported. Intervention length is 6 months.</p>	<p>Each face-to-face session with the clinical pharmacists, diabetes nurse educators and dietitians lasted between 20 and 30 minutes The average number of face-to-face visits and telephone consults with a pharmacist was four. The average number of physician visits per patient over the 6-month period was two visits for the intervention arm</p> <p>Comparison: Usual care with potential for referrals.</p>	<p>Source: Trial records</p> <p>Measure Type DiD</p>		<p>Components: Outpatient, labs, medications</p> <p>Source: Healthcare institutions electronic database</p> <p>Measure Type: DiD</p> <p>Productivity: NR</p> <p>Quality: Fair</p>	
<p>Author (Year): Simpson et al. (2015)</p> <p>Design: Based on RCTs</p> <p>Economic Method:</p>	<p>Location: Edmonton, Canada</p> <p>Setting: Primary care</p> <p>Population: Patients selected with diagnosis of T2DM from 5 clinics</p>	<p>Intervention: Patients met pharmacist who conducted a medication history and limited physical examination, which included blood pressure measurement. Pharmacist made</p>	<p>Intervention effects: Change in SBP: -6.0 mmHg Change in DBP: -1.0 mmHg Change in LDL:</p>	<p>Intervention cost per patient over 6 months: \$226</p> <p>Components: Pharmacist time</p> <p>Source:</p>	<p>Change in Healthcare Cost per patient per year: -\$416</p> <p>Components: Inpatient, ED, Outpatient, Specialty visits, Medications</p>	<p>Intervention Cost plus Change in Healthcare Cost per patient per year: -\$158</p>

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<p>Cost per QALY</p> <p>Funding Source: Canadian Diabetes Association, Institute of Health Economics, and Alberta Heritage Foundation for Medical Research</p> <p>Monetary Values: Reported in 2014 Canadian dollars</p>	<p>in primary care network</p> <p>Sample Size: Intervention: 131 Control: 129</p> <p>Characteristics: Mean age: 56.5 years Female: 59% T2DM: 100% Atrial Fibrillation: 2.9% Mean SBP: 130 Mean DBP: 74.5 Mean LDL: 2.35 Mean A1c: 7</p> <p>Time Horizon: Study dates not reported. Intervention length is 12 months.</p>	<p>guidelines-based recommendations to physician based on patient's medication regimen and medical history. Follow-up by pharmacists to address any issues with medication management, frequency and content at discretion of pharmacist, physician, and patient. Estimated contacts were 1.9 hours of pharmacist time over 12 months, made up of baseline 0.3 hours, 2 follow-ups 1.8 hours.</p> <p>Comparison: Usual care</p>	<p>-0.02</p> <p>Change in A1c: 0.0</p> <p>CVD 10-year Risk using UKPDS Risk Engine score reduced 1.0</p> <p>Source: Trial records</p> <p>Measure Type: DiD</p>	<p>Pharmacist record of encounters</p> <p>Quality: Fair</p>	<p>Source: Self-reported counts multiplied by area prices for inpatient and ED. Pharmacy records for medications</p> <p>Measure Type: DiD</p> <p>Productivity: NR</p> <p>Quality: Fair</p>	<p>Cost per QALY gained over 12 months: \$31,500</p> <p>Quality: Good</p> <p>Limitation: Time horizon of 12 months for cost-effectiveness.</p>
<p>Author (Year): Stoddart et al. (2013) Linked to McKinstry et al. (2013)</p> <p>Design: RCT</p> <p>Economic Method: Intervention cost and healthcare cost</p> <p>Funding Source:</p>	<p>Location: Lothian, Scotland, UK</p> <p>Setting: Recruit from 20 primary clinics</p> <p>Population: Ambulatory SBP/DBP $\geq 135/85$ and managed in primary care</p> <p>Sample Size: Intervention: 200 Control: 201</p> <p>Characteristics: Practices ranged in</p>	<p>Intervention: (HITS) trial. Nurses provided training in use of equipment: home-based automated BP device linked via Bluetooth to cell phone which transmits to central server. Patients and physicians log on to website and see data. Can send SMS text/emails to patients.</p> <p>Comparison: In usual care (U), those with high BP advised to consult with Primary</p>	<p>Intervention effects: BP based on ambulatory measurement from baseline to 6 months (HBP vs Usual) Reduction in adjusted BP SBP 4.3 mmHg DBP 2.3 mmHg lower</p> <p>Source: Trial records</p>	<p>Intervention cost per patient over 6 months: £70.77</p> <p>Components: Initial device use training £12.00 per patient one time only. All others were per patient per month, as follows: HBPM device £1.20 (£53.11 each) Mobile phone £1.44 (£48.48 each)</p>	<p>Total 6-month healthcare cost per patient excluding inpatient: HBP: £216.41 Usual: £177.95 Difference: £38.46</p> <p>Inpatient was higher in HBP by £105.47 and by £16.56 with outliers removed.</p> <p>Components: Inpatient, outpatient, medications, ED</p> <p>Source:</p>	<p>Healthcare cost per patient without inpatient plus program cost HBP: £287.18 Usual: £177.95 Difference: £109.23</p> <p>Cost per unit reduction in SBP was £25.56 and for DBP was £47.49</p> <p>Author Conclusion: The</p>

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<p>BUPA Foundation with additional support from the High Blood pressure Foundation and NHS</p> <p>Monetary Values: Reported in 2014 UK pounds</p>	<p>SES from deprived to affluent. Mean age: 60.5 years Female: 40% Mean SBP: 152.4 Mean DBP: 89.9 Median doses of HTN meds: 1.5</p> <p>Time Horizon: Recruitment ended 03/11/2009. Intervention length was 6 months.</p>	Care Provider and target SBP/DBP	<p>Measure Type: DiD</p>	<p>Server hosting £0.42 Web hosting £2.59 Sim card £1.98 Nurse time £2.17.</p> <p>Source: Local pricing and invoices.</p> <p>Quality: Good</p>	<p>Patient records. Inpatient stays were collected but details regarding nature of admission not recorded.</p> <p>Productivity: NR</p> <p>Quality: Good</p>	<p>HBP intervention cost the NHS more than usual care but was more effective than usual care in reducing BP.</p> <p>Limitation: No baseline cost captured.</p>
<p>Author (Year): Twiner et al. (2017)</p> <p>Design: RCT</p> <p>Economic Method: Cost per QALY</p> <p>Funding Source: NR</p> <p>Monetary Values: Reported in 2011 U.S. dollars</p>	<p>Location: Detroit, Michigan, USA</p> <p>Setting: Hypertension clinic and ED</p> <p>Population: Convenience sample drawn from patients seen in Emergency Department of tertiary academic medical center with SBP/SBP \geq140/90. Excluded existing CVD-CHD and those being actively treated in primary care. Those with subclinical hypertensive heart disease (SHHD) randomized. SHHD defined as left ventricular (LV)</p>	<p>Intervention: Patients checked with echocardiogram and those with SHHD (defined in eligibility) were randomized. Initial visit for BP measurement and record of medical history. Subsequent visits at 3, 6, 9, 12 months. Physician assistant measured BP every visit. Team of nurse practitioner and physician assistant titrated hypertension therapy. Patient educated on medication adherence at each visit. Telephone reminders for visits. All medication costs paid by study. Echocardiogram to determine SHHD at 12</p>	<p>Intervention effects: Of 88 completing protocols, 11% had SHHD regression, 23% reversal of LV hypertrophy, 35% had BP control.</p> <p>QALY based on 0.87 without chronic heart failure and 0.71 with chronic heart failure.</p> <p>Source: Study records and modeling</p> <p>Quality: Fair</p>	<p>Intervention cost: NR</p> <p>Intervention cost included in healthcare cost estimate.</p>	<p>Healthcare Cost per patient per year: \$897.13</p> <p>Components: Medication: \$43,778 labs: \$9,158 echocardiogram: \$29,515 Clinic: \$32,380 Time: \$2,339 Travel: \$1,740.</p> <p>Source: Study records and patient survey</p> <p>Productivity: NR</p> <p>Quality: Fair</p>	<p>Cost per QALY gained: \$35,865</p> <p>Quality: Fair</p> <p>Limitation: Cost per QALY estimated within 1-year trial.</p>

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	<p>hypertrophy, LV systolic dysfunction, or diastolic dysfunction.</p> <p>Sample Size: Intervention: 58 Control: 65</p> <p>Characteristics: Mean age: 49.2 years Female: 65% African American: 95% HTN: 100% Mean SBP 151.2 Mean DBP: 97.2</p> <p>Time Horizon: Recruitment November 2008 through April 2010. Intervention length was 12 months.</p>	<p>months. Follow-up every 3 months over 1 year.</p> <p>Comparison: NR</p>				
<p>Author (Year): Wagner et al. (2016)</p> <p>Design: RCT</p> <p>Economic Method: Intervention cost and healthcare cost</p> <p>Funding Source: Gordon and Betty Moore Foundation</p>	<p>Location: San Francisco, California, USA</p> <p>Setting: Primary care</p> <p>Population: Patients (1) carried a diagnosis of diabetes and had an HbA1c ≥8.0% within the previous year or had not had their HbA1c measured in the past 12 months; (2) their most recent systolic blood pressure (SBP)</p>	<p>Intervention: Health coaches helped with self-management skills for diabetes, hypertension, and hyperlipidemia; provided social and emotional support; assisted with lifestyle change; facilitated medication understanding and adherence; navigated the clinic; addressed patient barriers to care; and helped access community resources.</p>	<p>Intervention effects: Change in SBP: -8.6 mmHg Change in LDL: -27.9 Change in A1c: -1.2</p> <p>Source: Study records</p> <p>Measure Type: DiD</p>	<p>Intervention Cost per patient per year: \$489</p> <p>Components: Labor, training, supplies, and space</p> <p>Source: Study reports and forms</p> <p>Quality: Good</p>	<p>Change in Healthcare Cost per patient per year: -\$121</p> <p>Components: Inpatient, outpatient, medications, ED</p> <p>Source: Patient records. Inpatient stays were collected but details regarding nature of admission not recorded.</p> <p>Measure Type: DiD</p>	<p>NR</p> <p>Limitation: No baseline cost captured.</p>

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<p>Monetary Values: Reported in 2013 U.S. dollars</p>	<p>was ≥ 140 mmHg and was within the past 12 months; or (3) had calculated low density lipoprotein (LDL) ≥ 160 (or ≥ 100 if diabetic) within the last year or had not had their LDL measured in the past 12 months.</p> <p>Sample Size: Intervention: 224 Control: 221</p> <p>Characteristics: Mean age: 52.7 years Female: 55% Latino: 70.1% African American: 19% White: 2.5% Asian: 4.1% Less than High School: 57.1% Unemployed: 13.8% Mean SBP: 157.7 Mean LDL: 146.3 Mean A1c: 9.8</p> <p>Time Horizon: Study years 2011-2012 Intervention length was 12 months.</p>	<p>Multiple visits depending on patient.</p> <p>Comparison: Usual care</p>			<p>Productivity: NR</p> <p>Quality: Good</p>	