Cancer Screening: Interventions Engaging Community Health Workers, Colorectal Cancer(CRC)

Summary Evidence Table – Economic Review

Study	Intervention Characteristics	Population Characteristics	Results
Author, Year: Elkin et al., 2012 **Cancer Screening Test:** Colonoscopy **Study Design**: 3-arms Pre-Post **Economic Analysis:** Cost Benefit Payer Perspective **Funding source:** Grant from the New York Community Trust Monetary values are in year 2007 U.S dollars	**Location**: United States (New York City, NY) **Setting**: Healthcare facility **Intervention Time Frame:** 3 years **Intervention Details**: Colonoscopy patient navigation program at 3 urban public hospitals. Program effectiveness was assessed in a 2-group, pre- and post-program, nonrandomized evaluation comparing program hospitals with comparison hospitals that served similar populations. The full-time patient navigators were lay health educators who received intensive initial training in a 1-week program orientation and subsequent ongoing training. They were recruited from within the hospital systems or the surrounding communities, which have predominantly minority populations.	**Target population/Eligibility:** Participants, ≥50 years, of low-income status with high-risk for colorectal cancer. **Analytic Sample Size:** Hospital A: 131 Hospital B: 108 Hospital C: 171 **Demographics**: Age: ≥50 years Race/Ethnicity: Hispanic: 70.8% African American: 16.4% White: 3.9% Asian: 6.3% Other: 6.4% Female: 60%	**Screening Outcome:** Colonoscopy **Follow-up Time**: 12 months **Effects of intervention:** Screening rates: Hospital A: 44% Hospital B: 48 % Hospital C: 67% **2018 Adjusted Intervention Cost per Person:** Hospital A: $972 Hospital B: $3,768 Hospital C: $670 **2018 Adjusted Economic Benefit:** $258 **2018 Adjusted Net Cost Benefit (Benefit/Cost Ratio):** Hospital A: $17 (1.1) Hospital B: -$517 (0.3) Hospital C: $40 (1.2) **Cost Driver:** Wages, Supervision/Training

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	At each program site, key activities of the patient navigators included reminding patients to arrive at scheduled appointments, reviewing bowel preparation procedures and general colonoscopy information, addressing patient concerns about the procedure, and linking patients with financial services. **Comparison:** Comparator is no CHW		
Author, Year: Hayhoe et al., 2018 **Cancer Screening Test:** NR **Design**: Modeling **Economic Analysis:** Cost-effectiveness (per additional screen) Societal Perspective **Funding source:** Imperial National Institute for Health Research Biomedical Research Center and the National Institute for Health Research Collaborations for Leadership in Applied	**Location**: United Kingdom **Setting**: Community **Intervention Time Frame:** National 4-year program from April 2006 to December 2010 **Intervention Details**: Modeling a scaled integration of CHWs in the UK National Health System. Five chronic diseases common in UK primary care were used, and published prevalence data were applied to illustrate the numbers of patients with these conditions that community health workers might provide	**Target population/Eligibility:** National population of UK patients with chronic conditions. **Analytic Sample Size** **CRC** 2,414,620 **Demographics**: Age: CRC: 50–64 years	**Screening tests:** Any colorectal screening **Follow-up Time**: CRC: 2.5 years **Effects of intervention:** Modeled rates of: 10%, 20%, 30% **CRC:** **2018 Adjusted Intervention Cost per Person** Salary Grade 2 10%: $1,661 20%: $1,107 30%: $830 Salary Grade 5 10%: $1,790 20%: $1,193 30%: $895

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Health Research and Care for Northwest London Monetary values are in year 2017 U.K pounds	with homebased support, thus indicating the possible benefit to general practices in additional chronic disease management. Modeling was done with projected increase in screening rates of 10%, 20%, 30% and the attributable population and costs for the role of CHWs specific to the type of cancer screening were considered. CHW salaries were calculated based on national salary grades (£18,000-£22,148). Role of CHWs in chronic disease management has lower costs compared to costs of using medical practitioners in this capacity. **Comparison:** Comparator is no CHW		Salary Grade 8 10%: $1,975 20%: $1,317 30%: $615 **2018 Adjusted Incremental Cost Per Additional Screen** Salary Grade 2 10% increase: $16,607 20% increase: $5,536 30% increase: $2,768 Salary Grade 5 10% increase: $17,902 20% increase: $5,967 30% increase: $2,984 Salary Grade 8 10% increase: $19,755 20% increase: $6,585 30% increase: $3,292 **Cost Driver:** Wages
Author, Year: Jandorf et al., 2013 **Cancer Screening Test:** Colonoscopy **Study Design**: Randomized Controlled Trial **Economic Analysis:** Cost Analysis	**Location**: United States (New York City, NY) **Setting**: Healthcare facility **Intervention Time Frame:** 2 years **Intervention Details**:	**Target population/Eligibility:** Participants ≥50 years, without active gastrointestinal symptoms, significant comorbidities, or a history of inflammatory bowel disease or CRC. **Analytic Sample Size:** 503	**Screening Outcome:** Colonoscopy **Follow-up Time**: 5 years **Effects of intervention:** Screening rates: 78.5% **2018 Adjusted Intervention Cost per Person:**

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Payer Perspective **Funding source:** National Cancer Institute, by the Doris Duke Charitable Foundation, and by Mount Sinai School of Medicine Monetary values are in year 2012 U.S dollars	A cohort of African Americans received culturally targeted patient navigation (PN) part of a National Cancer Institute-funded randomized controlled trial (RCT) comparing the efficacy of professional navigators (trained health educators) versus community-based peer navigators (lay individuals aged >50 years from East Harlem who had undergone colonoscopy and who were trained to conduct PN). Peer-PN is a form of CHW. Other patients, predominantly of Latino background, received 1 of 2 types of non-targeted PN in a separate RCT funded by Mount Sinai School of Medicine that compared the efficacy of 2 navigation scripts. Overall, there were 4 types of PN. Participants received 3 scripted telephone calls: a scheduling call, a call 2 weeks before the colonoscopy, and a final call 3 days before the procedure. After the first call, written instructions for the bowel preparation and a reminder postcard with the colonoscopy date were mailed.	**Demographics**: Age: 50-64 years Race/Ethnicity: Hispanic: 45.7% African American: 46% Other: 8% Female: 68%	$29 **Cost Driver:** Wages, Supervision/Training

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	The only difference between the groups was that one script (Peer-PN) also included a discussion about the importance of CRC screening and asked about patients' concerns. However, since the interventions share the key characteristics, the data was analyzed together. **Comparison:** Comparator is no CHW		
Author, Year: Kim et al., 2018 **Cancer Screening Test:** Colonoscopy **Study Design**: Cohort Study **Economic Analysis:** Cost Analysis Payer Perspective **Funding source:** Centers for Disease Control and Prevention to RTI International and the Center for Asian Health Equity Monetary values are in year 2017 U.S dollars	**Location**: United States (Chicago, IL) **Setting**: Healthcare facility **Intervention Time Frame:** 1 year **Intervention Details**: Between 2013 and 2014, the University of Chicago Medical Center (UCMC) participated in a State of Illinois patient navigation (PN) program to enhance CRC screening among uninsured Illinois residents. Qualifications for the non-nurse navigator position included previous navigation experience, ideally in a specialty care setting; a college	**Target population/Eligibility:** Participants, 50 to 75 years, without CRC diagnosis, inflammatory bowel disease, or undergoing a diagnostic colonoscopy. **Analytic Sample Size:** 536 **Demographics**: Age: 50-75 years Race/Ethnicity: African American: 65% Female: 60%	**Screening Outcome:** Colonoscopy **Follow-up Time**: NR **Effects of intervention:** 85.1% among those who were selected to receive PN compared with 74.3% when no navigation was implemented **2018 Adjusted Intervention Cost per Person:** $126 **Cost Driver:** Wages, Supervision/Training

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	education; and residence within the geographic service areas of the hospital. Before initiation of the PN services, all patients received up to 2 gastrointestinal procedure nurse calls to remind patients of their procedure time and place and to field any questions about the process. After the initiation of PN, patients who were identified as requiring PN services did not continue to receive nurse pre-procedure calls. **Comparison:** Comparator is no CHW		
Author, Year: Ladabaum et al., 2015 **Cancer Screening Tests:** Colonoscopy **Study Design**: Modeling **Economic Analysis:** Cost-effectiveness (Per QALY saved) Societal Perspective Sensitivity analysis was performed **Funding source:**	**Location**: United States (New York City, NY) **Setting**: Healthcare facility **Intervention Time Frame:** 2 years **Intervention Details**: A hypothetical cohort based on a previous study (Pelto, 2015), which included 43% African Americans, 49% Hispanics, 4% whites, and 4% others. For the African American, Hispanic, and white subpopulations, the	**Target population/Eligibility:** Participants, 50-64 years. **Analytic Sample Size:** 392 **Demographics**: Age: 50-64 years Race/Ethnicity: Hispanic: 49% African American: 43% White: 4% Other: 4% Female: 68%	**Screening Outcome:** Colonoscopy **Follow-up Time**: 1 year **Effects of intervention:** Screening rates: 65% **2018 Adjusted Intervention Cost per Person:** $29 **2018 Adjusted Incremental Cost:** -$144 **Incremental QALY saved:**

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National Cancer Institute, the Doris Duke Charitable Foundation, Mount Sinai School of Medicine Monetary values are in year 2012 U.S dollars	age dependent prevalence of lesions at simulation entry and the transition probabilities from normal to small polyp or localized CRC was adjusted. Colonoscopy uptake without navigation was 40% based on uptake at Mount Sinai Hospital before navigation was available, and it was conservatively assumed that uptake with navigation would be 65%. Primary outputs were quality-adjusted life-years (QALYs) and costs per individual, which were discounted by 3% per year. **Comparison:** Comparator is no CHW		0.014 **2018 Adjusted Incremental Cost per QALY saved:** -$10,289 **Cost Driver:** Wages, Supervision/Training
Author, Year: Lairson et al., 2018 **Cancer Screening Tests:** Colonoscopy Fecal Immunochemical Test (FIT) **Study Design**: Quasi-experimental **Economic Analysis:**	**Location**: United States (El Paso, TX) **Setting**: Community **Intervention Time Frame:** 6 months **Intervention Details**: The Against Colorectal Cancer in Our Neighborhoods (ACCION) program was a	**Target population/Eligibility:** Participants 50 to 75 years old, due for colorectal cancer screening, self-reported Texas address, and uninsured without rectal bleeding in the prior 3 months. **Analytic Sample Size:** 467 Flipchart: 148 Video: 160	**Screening Outcomes:** Colonoscopy (high risk patients with positive family history or prior adenomatous polyps) Fecal Immunochemical Test (FIT) (average risk patients) **Follow-up Time**: 6 months **Effects of intervention:** Screening rates:

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Cost-effectiveness (per additional screen) Payer Perspective **Funding source:** Cancer Prevention and Research Institute of Texas. Monetary values are in year 2012 U.S dollars	community-wide service and research program designed to educate and facilitate colorectal cancer screening compliance among the low-income uninsured Hispanic population in El Paso, Texas. The cost-effectiveness analysis was conducted alongside a community intervention trial. The quasi-experimental study design, intervention, and outcomes were described in detail in (Shokar et al., 2015; Shokar et al., 2016). The intervention consisted of education, navigation, and provision of no-cost colorectal cancer screening and diagnostic testing, if needed. For the video arm, participants watched a motivational video with information about colorectal cancer and the importance of screening. The CHW arm involved the use of a flip chart for explaining the same content covered in the video. For the combined video and CHW arm, a CHW played the video and had specified pauses for standardized interactive activities. The primary screening test was the	Video + flipchart: 159 **Demographics**: Age: 50-75 years Race/Ethnicity: Hispanic: 100% Female: 75%	**Individual Session** Flipchart: 87.09% Video: 78% Video + flipchart: 83.17% **Group Session** Flipchart: 74.54% Video: 80% Video + flipchart: 75% **2018 Adjusted Intervention Cost per Person:** **Individual Session** Flipchart: $93 Video: $87 Video + flipchart: $93 **Group Session** Flipchart: $73 Video: $74 Video + flipchart: $73 **2018 Adjusted Incremental Cost per Additional Screen:** **Individual Session** Flipchart: $120 Video: $129 Video + flipchart: $127 **Group Session** Flipchart: $113 Video: $105 Video + flipchart: $113 **Cost Driver:**

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	FIT for average-risk individuals and colonoscopy for high-risk individuals. **Comparison:** Comparator is no CHW.		Wages, Supervision/Training
Author, Year: Mil et al., 2018 **Cancer Screening Test:** Fecal Occult Blood Test (FOBT) **Study Design**: Randomized Controlled Trial **Economic Analysis:** Cost-effectiveness (per additional screen) Payer Perspective **Funding source:** French National Institute of Cancer Monetary values are in year 2013 U.S dollars	**Location**: France **Setting**: Community **Intervention Time Frame:** 2 years **Intervention Details**: Navigation consisted of personalized support provided by social workers. A cost-effectiveness analysis of navigation versus usual screening in the Picardy region of northern France. Navigation services included telephone follow-up, home visits, and mailing of the FOBT kit. If a participant could not be reached by telephone after three or four attempts, a postal reminder was sent containing a reply coupon with a prepaid envelope on which participants could provide their phone number or indicate their wish for a home visit.	**Target population/Eligibility:** Participants, 50 to 74years in a national screening program in Picardy, France. **Analytic Sample Size:** 8105 **Demographics**: Age: 50 to 74 years Sex: Female: 49%	**Screening Outcome:** FOBT **Follow-up Time**: 4 months **Effects of intervention:** 3.3% **2018 Adjusted Intervention Cost per Person** $34 **2018 Adjusted Incremental Cost Per Additional Screen** $1046 **Cost Driver:** Wages, Supervision/Training

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	Comparison: Control group in a national program, received a client reminder, and reduced administration barriers (free, mailed FOBT kit)		
Author, Year: Shokar et al., 2015 **Cancer Screening Tests:** Colonoscopy Fecal Immunochemical Test (FIT) **Study Design**: Quasi-experimental **Economic Analysis:** Cost-Analysis **Funding source:** Cancer Prevention and Research Institute of Texas. Monetary values are in year 2011 U.S dollars.	**Location**: United States (El Paso, TX) **Setting**: Community Healthcare facility **Intervention Time Frame:** 6 months **Intervention Details**: The Against Colorectal Cancer in Our Neighborhoods (ACCION) program was a community-wide service and research program designed to educate and facilitate colorectal cancer screening compliance among the low-income uninsured Hispanic population in El Paso, Texas. The intervention consisted of education, navigation, and provision of no-cost colorectal cancer screening and diagnostic testing, if needed. *Promotoras* assess eligibility and risk level (family history of	**Target population/Eligibility:** Participants 50 to 75 years old, history of colorectal cancer, no health insurance, living in Texas, due for CRC screening and uninsured without rectal bleeding in the prior 3 months. **Analytic Sample Size:** 6000 **Demographics**: Age: 50-64 years Race/Ethnicity: Hispanic: 100%	**Screening Outcomes:** Colonoscopy (high risk patients with positive family history or prior adenomatous polyps) Fecal Immunochemical Test (FIT) (average risk patients) **Follow-up Time**: 6 months **2018 Adjusted Intervention Cost per Person** $44 **Cost Driver:** Wages, Supervision/Training

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	CRC, prior history of adenomas) to determine which test they qualify for. The *promotora* delivers the education individually or in groups depending on convenience and space availability. Eligible average-risk participants are given the FIT kit and a postage-paid return envelope, and the stool collection process is reviewed with them. Those qualifying for colonoscopy are given an information sheet explaining that the navigator will contact them to set up the screening colonoscopy. **Comparison:** Comparator is no CHW		
Author, Year: Wilson et al., 2015 **Cancer Screening Tests:** Colonoscopy **Study Design**: Modeling **Economic Analysis:** Cost-effectiveness (per QALY saved) Societal Perspective	**Location**: United States (New York City, NY) **Setting**: Healthcare facility **Intervention Time Frame:** 2 years **Intervention Details**: The Colorectal Cancer Male Navigation (CCMN) Program was funded by the Cancer	**Target population/Eligibility:** Participants, ≥50 years, who were members of CareLink (Bexar County's financial assistance program) and who had not received CRC screening in the last 10 years. **Analytic Sample Size:** 461 **Demographics**: Age: 50-64 years Race/Ethnicity:	**Screening Outcome:** Colonoscopy **Follow-up Time**: NR **Effects of intervention:** Screening rates: 80% **2018 Adjusted Intervention Cost per Person:** $529 **2018 Adjusted Incremental Cost:**

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Sensitivity analysis was performed. **Funding source:** Cancer Prevention and Research Institute of Texas Monetary values are in year 2013 U.S dollars.	Prevention and Research Institute of Texas. The CCMN Program had four main components: (1) no-cost screening colonoscopy referrals for Hispanic men 50 years of age and older, (2) program navigation provided by bilingual patient navigators, (3) open-access endoscopy through the removal of system barriers and assisted transportation, and (4) colonoscopy services, provided at no cost by a bilingual, male Hispanic surgeon. The CHW made home visits to encourage participants to schedule and receive screening and to help address concerns and issues. To encourage participation in the program, the CHW engaged immediate family members in CRC discussions and also served as a liaison between targeted Hispanic local communities and patient care services. **Comparison:** Comparator is no CHW.	Hispanic: 70% African American: 18% White: 4% Female: 100%	-$1,219 **Incremental QALY saved:** 0.3 **2018 Adjusted Incremental Cost per QALY saved:** -$4,063 **Cost Driver:** Wages, Supervision/Training

References

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2. Shokar NK, Byrd T, Lairson DR, Salaiz R, Kim J, et al. Against colorectal cancer in our neighborhoods, a community-based colorectal cancer screening program targeting low-income Hispanics: program development and costs. *Health Promotion Practice* 2015;16(5):656-66.
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