

Cancer Screening: Interventions Engaging Community Health Workers – Colorectal Cancer

Community Preventive Services Task Force Finding and Rationale Statement Ratified April 2019

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CPSTF Finding and Rationale Statement

Intervention Definition

Interventions that engage community health workers (CHWs) to increase colorectal cancer screening implement one or more interventions reviewed by the Community Preventive Services Task Force (CPSTF) to do the following:

- Increase demand for screening services using [group education](http://www.thecommunityguide.org/findings/cancer-screening-group-education-clients-colorectal-cancer) [www.thecommunityguide.org/findings/cancer-screening-group-education-clients-colorectal-cancer], [one-on-one education](http://www.thecommunityguide.org/findings/cancer-screening-one-one-education-clients-colorectal-cancer) [www.thecommunityguide.org/findings/cancer-screening-one-one-education-clients-colorectal-cancer], [client reminders](http://www.thecommunityguide.org/findings/cancer-screening-client-reminders-colorectal-cancer) [www.thecommunityguide.org/findings/cancer-screening-client-reminders-colorectal-cancer], or [small media](http://www.thecommunityguide.org/findings/cancer-screening-small-media-targeting-clients-colorectal-cancer) [www.thecommunityguide.org/findings/cancer-screening-small-media-targeting-clients-colorectal-cancer]
- Improve access to screening services by [reducing structural barriers](http://www.thecommunityguide.org/findings/cancer-screening-reducing-structural-barriers-clients-colorectal-cancer) [www.thecommunityguide.org/findings/cancer-screening-reducing-structural-barriers-clients-colorectal-cancer]

CHWs are trained frontline health workers who serve as a bridge between communities and healthcare systems. They are from, or have a close understanding of, the community served. They often receive on-the-job training and work without professional titles. Organizations may hire CHWs or recruit volunteers to act in this role. CHWs may work alone or as part of an intervention team that includes other healthcare professionals.

CPSTF Finding (April 2019)

The Community Preventive Services Task Force (CPSTF) recommends interventions that engage CHWs to increase colorectal cancer screening (by colonoscopy or fecal occult blood test [FOBT]) based on strong evidence of effectiveness. Studies included in the systematic review showed increases in colorectal cancer screening rates when CHWs delivered interventions alone or as part of an implementation team.

Interventions that engage CHWs to increase colorectal cancer screening are typically implemented in underserved communities to improve health and can enhance health equity.

The CPSTF finds interventions that engage CHWs in a team to increase colorectal cancer screening (by colonoscopy) are cost-effective based on a conservative threshold of \$50,000 per quality-adjusted life year saved and may also result in net cost-savings.

Rationale

Basis of Finding

The CPSTF recommendation is based on evidence from a systematic review of 66 studies (search period database inception – July 2017). Included studies evaluated intervention effects on breast (36 studies), cervical (29 studies), or colorectal (17 studies) cancer screening use—services recommended by the U.S. Preventive Services Task Force (2016a [www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening1], 2018 [www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/cervical-cancer-screening2], 2016b [www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/colorectal-cancer-screening2], respectively).

The included studies examined interventions where CHWs worked alone or as part of a team. To better understand CHW effectiveness in increasing cancer screening use, the following stratifications were used:

- CHW alone – CHWs implemented everything independently
- CHW added – CHWs worked in a team, where the effect of adding a CHW could be isolated
- CHW in a team – CHWs worked in a team, but the effect of adding CHW could not be isolated; only the effect of the whole team could be determined

Compared with no intervention or usual care, interventions that engaged community health workers increased colorectal cancer screening whether CHWs worked alone or in a team.

- Overall:
 - Up-to-date using any colorectal cancer screening test*: a median increase of 12.5 percentage points (interquartile interval [IQI]: 4.7 to 21.0; 9 study arms)
 - Up-to-date using colonoscopy: a median increase of 13.0 percentage points (Range: 7.1 to 16.2; 4 study arms)
 - Up-to-date using FOBT: a median increase of 7.8 percentage points (IQI: 5.0 to 9.4; 11 study arms)
- CHW alone:
 - Up-to-date using any colorectal cancer screening test*: a median increase of 12.8 percentage points (Range: 12.1 to 37.3; 4 study arms)
 - Up-to-date using colonoscopy: a median increase of 13.0 percentage points (Range: 7.1 to 16.2; 4 study arms)
 - Up-to-date using FOBT: a median increase of 7.8 percentage points ([IQI]: 3.0 to 9.4; 6 study arms)
- CHW added:
 - Up-to-date using any colorectal cancer screening test*: 4.0, 7.6 percentage points; 2 study arms
 - Up-to-date using FOBT: a median increase of 7.5 percentage points (IQI: 5.2 to 22.6; 5 study arms)
- CHW in a team:
 - Up-to-date using any colorectal cancer screening test*: a median increase of 13.4 percentage points (IQI: 0.9 to 21; 5 study arms)
 - Up-to-date using FOBT: 13.5, 28.6 percentage points; 2 study arms

*Up-to-date using any colorectal cancer screening test: based on [USPSTF 2016b](#)

[<https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/colorectalcancer-screening2>], people are considered current with colorectal cancer screening if they obtained FOBT or fecal immunochemical test (FIT) within last year, or colonoscopy within last 10 years, or flexible sigmoidoscopy within last 5 years.

The CPSTF has related findings for interventions engaging CHWs to increase appropriate screening for the following:

- [Breast cancer \(recommended\)](#) [www.thecommunityguide.org/findings/cancer-screening-interventions-engaging-community-health-workers-breast-cancer]
- [Cervical cancer \(recommended\)](#) [www.thecommunityguide.org/findings/cancer-screening-interventions-engaging-community-health-workers-cervical-cancer]

The remaining sections of the finding and rationale statement are based on an analysis of all included studies across breast, cervical, or colorectal cancer screening.

Stratified Analyses

Interventions that engage community health workers vary in the type and number of intervention components used, CHW roles, and study population characteristics. The review team conducted stratified analyses to understand the influence of these factors on cancer screening use.

Included studies used intervention components such as one-on-one education, group education, small media, and client reminders to increase community demand for screening services. Studies also improved community access to screening services by reducing administrative barriers, assisting with appointment scheduling, providing transportation, translation, or child care.

Interventions were designed to increase community demand, improve access to services, or both. Interventions that aimed to do both reported the largest increases in screening rates (median increase of 18.5 percentage points, IQI: 8.9 to 26.6; 24 study arms).

Interventions engaged CHWs to implement one to six intervention components. While increases in screening use were seen across interventions with different numbers of components, larger increases were seen when CHWs implemented more intervention components.

CHWs most commonly provided one-on-one or group education, either alone or in combination with other components. Interventions that provided group education produced larger increases in cancer screening use (15.0 percentage points, IQI: 8.9 to 25.0; 35 study arms) than ones that provided one-on-one education (9.8 percentage points, IQI: 5.0 to 20.2; 42 study arms). Among studies that aimed to increase access to screening services, larger increases were seen when CHWs assisted with translation (30.2 percentage points, range: 18.2 to 58.9; 4 study arms) or addressed transportation barriers (26.8 percentage points, IQI: 17.9 to 58.6; 9 study arms).

Most studies provided information about baseline screening rates and were stratified to compare 0% vs. non-0% baseline or 0% to 50% vs. ≥50% baseline. Interventions were effective across all strata, though participants with baseline between 0% and 50% saw a greater increase (15.9 percentage points, IQI: 8.9 to 25.1; 22 study arms) than participants with ≥50% baseline (8.4 percentage points, IQI: 0.2 to 15.6; 20 study arms).

Applicability and Generalizability Considerations

Intervention Settings

The CPSTF finding is considered applicable to a range of settings within or outside the United States, including healthcare or community-based settings in urban or rural areas. Studies were conducted in the United States (61 studies), Canada (1 study), in both the United States and Canada (1 study), Europe (2 studies), and Australia (1 study).

Population Characteristics

Interventions were effective for age-appropriate populations that reported different baseline screening use.

Interventions were effective across racial and ethnic groups examined, and many studies focused on one racial or ethnic group. Only two interventions were implemented among majority or 100% American Indian/Alaska Native populations.

Interventions were effective across population groups with different educational backgrounds, employment levels, insurance statuses, and income levels. Slightly higher effects were reported in studies that targeted mostly low income populations.

While interventions were effective whether or not participants had a regular source of care, larger increases were observed when all or most of the participants had an established source of care.

Intervention Characteristics

Findings should be applicable across intervention characteristics, independent of the number and type of intervention components used. Interventions were effective whether components were used to increase demand or both demand and access. Only two studies increased access to services alone and were effective in increasing cancer screening.

Interventions were effective when components were delivered remotely, face-to-face, or both, though greater effects were reported when CHWs used both methods of communication. Interventions with or without tailoring produced similar increases in screening.

CHWs met with study participants one or more times, and larger increases were reported when there were more encounters. With two or more encounters, interventions lasted from half a month to 60 months and were stratified into <6 months, between 6 and 12 months, and ≥ 12 months. While all of the interventions were effective, slightly larger effects were reported by studies with longer intervention durations.

CHW Roles

CHWs in the included studies focused on six out of the ten core roles identified by the Community Health Worker Core Consensus Project in 2016 (C3 Project): cultural mediation among individuals, communities, and health and social service systems; culturally appropriate education and information; care coordination, case management, and system navigation; coaching and social support; individual and community capacity building; and outreach. Findings are applicable independent of the type or the number of core roles performed by the CHWs.

Data Quality Issues

Study designs included randomized control trials (43 studies), pre-post with concurrent comparison groups (11 studies), or pre-post (12 studies). Stratified analyses found increases across different study designs, indicating robust findings.

Other Benefits and Harms

No additional benefits or harms were reported in the included studies.

Included studies reported that CHWs improved their self-confidence and feelings of self-worth by delivering the interventions. The broader literature suggests that CHWs can also increase their target population's access to other healthcare services.

Economic Evidence

Evidence from the systematic economic review shows interventions engaging CHWs in a team to increase colorectal cancer screening (by colonoscopy) are cost-effective and may also result in net cost-savings.

The economic review included nine studies (search period through April 2019) specific to colorectal cancer screening. Studies were conducted in the United States (7 studies), the United Kingdom (1 study), and France (1 study). They focused on increasing demand for colorectal cancer screening (3 studies), and increasing demand for, and access to, screening (6 studies). All monetary values were adjusted to 2018 U.S. dollars.

The U.K. study was a simulated national model that reported costs of CHWs within three different salary grades and screening rates. In addition to promoting cancer screening, the CHWs helped clients manage chronic conditions such as asthma and diabetes. The France study, also a national study, evaluated interventions in which CHWs used one-on-one education and client reminders to increase colorectal cancer screening. Across the two studies, the median cost per person targeted was \$1,150 (IQI: \$776 to \$1,693).

Two of the U.S. studies were quasi-experimental studies, two were Markov models, one was a pre-post study, one was a randomized controlled trial, and one was a cohort study. The pre-post study reported costs from three hospitals that involved different staff in the intervention. One of the quasi-experimental studies provided the intervention in either individual or group sessions using three intervention modalities (i.e., flipchart, video, combined flipchart and video). Across the U.S. studies, the median cost per person was \$90 (IQI: \$66 to \$564).

One study from the United States examined cost-benefit for three hospitals from a payer perspective and found mixed evidence. They reported net cost benefits of \$17, -\$517, and \$40, and benefit-to-cost ratios of 1.1, 0.3, and 1.2, respectively.

Three studies, including the U.K. and France studies, reported the incremental cost per additional person screened. The U.K. and France studies reported a median incremental cost per additional person screened of \$5,752 (IQI: \$2,930 to \$16,931). The U.S. study, which provided the intervention in individual or group sessions using three intervention modalities, had a median incremental cost per additional person screened of \$117 (IQI: \$111 to \$128).

Two good quality studies, both Markov models, reported incremental cost per quality-adjusted life year (QALY) gained from a societal perspective. An intervention program in New York that targeted African Americans and Hispanics who were aged 50 years and older reported a 25 percentage point increase in screening, and a negative incremental cost-effectiveness ratio (ICER) with cost-savings of \$10,289 per QALY gained (Ladabaum et al., 2015). A study in Texas that targeted Hispanic men aged 50 years and older reported a 64 percentage point increase in screening, and a negative ICER with cost-savings of \$4,063 per QALY gained (Wilson et al., 2015). Both studies reported had screening increases that were higher than the median increase of 13 percentage point found in the effectiveness review. Economic evidence indicates interventions that engage CHWs to increase colorectal cancer screening are cost-effective based on an ICER below a conservative threshold of \$50,000 per QALY saved and may also result in net cost-savings. The authors of both studies also conducted sensitivity analyses. Ladabaum et al. found that for the cost-savings to disappear, either the screening increase had to go down 25 to 10 percentage points or the cost per participant had to increase 10-fold. Wilson et al. only considered the cost of screening and found that if the increase in screening rate remained the same, a 2.5 fold increase in cost per participant would cause the cost-savings to disappear.

Considerations for Implementation

Results from stratified analyses showed interventions were effective across different settings with different population or intervention characteristics, suggesting intervention composition can be flexible. Studies in this review recruited CHWs from the target community or matched them with participants by race, language, or culture. The CHWs worked alone or as part of a team and implemented interventions with a heterogeneous mix of components, duration, and intensity. Decision makers should consider the local population, needs, and context when selecting intervention components.

While most of the included studies targeted underserved populations, increases in cancer screening were observed for all population groups examined (i.e., across different racial or ethnic groups and socioeconomic status). Interventions implemented in areas with low-income or low screening rates, however, produced larger screening increases. In 2015, people without health insurance or with incomes less than 139% of the federal poverty level had much lower cancer screening rates than their counterparts. Asian Americans, American Indians, and Alaska Natives also had lower screening rates than other racial and ethnic groups (White 2015). Interventions engaging CHWs can be targeted to these populations to increase cancer screening and improve health equity.

Most of the included studies provided some form of education. Interventions involving group education reported greater effects than those involving one-on-one education. It's possible that the social support received in group sessions motivates more participants to obtain screening. Interventions were effective whether or not they tailored to individual participant's needs. It's possible that with CHWs delivering the interventions based on their understanding of the target communities and individual participant, additional tailoring might not add value. While effectiveness was similar across the core roles performed by CHWs (C3 Project 2016), interventions reported larger increases in screenings when CHWs provided care coordination, case management, or system navigation.

Greater increases in cancer screening were observed when interventions had more than two components, or when interventions increased both demand for, and access to, screening services. Similar findings were reported in the Community Guide review on [multicomponent interventions to increase colorectal cancer screening](http://www.thecommunityguide.org/findings/cancer-screening-multicomponent-interventions-colorectal-cancer) [www.thecommunityguide.org/findings/cancer-screening-multicomponent-interventions-colorectal-cancer]. Interventions that continued longer than six months or consisted of multiple sessions were more effective than ones with shorter durations or single-session interventions. Results indicate that effects may wane over time and booster sessions might be needed.

Technology infrastructure may be a consideration for some intervention approaches. Interventions that used both face-to-face and remote methods of communication were more effective than interventions that used either method alone. Technology may increase efficiency and reduce maintenance costs (Flight et al., 2012; Mosen et al., 2010), but it also may require upfront costs and resources (Taplin et al., 2008; Leffler et al., 2011). In addition, populations may not have equal access to these technologies (Flight et al., 2012).

The Community Preventive Services Task Force also recommends interventions engaging CHWs to improve [cardiovascular disease management](http://www.thecommunityguide.org/findings/cardiovascular-disease-prevention-and-control-interventions-engaging-community-health) [www.thecommunityguide.org/findings/cardiovascular-disease-prevention-and-control-interventions-engaging-community-health], [diabetes prevention](http://www.thecommunityguide.org/findings/diabetes-prevention-interventions-engaging-community-health-workers) [www.thecommunityguide.org/findings/diabetes-prevention-interventions-engaging-community-health-workers], and [diabetes management](http://www.thecommunityguide.org/findings/diabetes-management-interventions-engaging-community-health-workers) [www.thecommunityguide.org/findings/diabetes-management-interventions-engaging-community-health-workers]. Together with the findings from the current review, it is clear that CHWs are effective in preventing and managing multiple chronic conditions. Currently, only a few states have certification processes in place

for CHWs (some voluntary, some required). Other states are working towards certification. Standardizing the role of CHWs and providing certification opportunities would ensure CHW proficiency. It could also encourage more people to become CHWs and persuade decision makers to fund interventions that engage CHWs.

Evidence Gaps

Several areas were identified as having limited information. Additional research would help answer questions and strengthen findings in these areas.

- What is the impact of these interventions on repeat screening?
- Are these interventions effective among American Natives/Alaska Natives?
- Is intervention effectiveness influenced by any of the following?
 - Participants' health literacy
 - Supervision of CHWs
 - Compensation for CHW's work
 - Inclusion of CHWs in research and evaluation
- How does CHW training affect outcomes? What is the best way to train CHWs for this type of work?
- Are the interventions using FIT or FOBT cost-effective?
- Are the interventions to increase colorectal cancer screening cost-effective in rural settings?
- Do the monetary benefits associated with increased colorectal cancer screenings exceed the intervention costs?

References

Flight IH, Wilson CJ, Zajac IT, Hart E, McGillivray JA. Decision support and the effectiveness of web-based delivery and information tailoring for bowel cancer screening: an exploratory study. *JMIR Res Protoc* 2012;1(2):e12.

Ladabaum U, Mannalithara A, Jandorf L, Itzkowitz SH. Cost-Effectiveness of Patient Navigation to Increase Adherence with Screening Colonoscopy among Minority Individuals. *Cancer*. 2015 Apr 1;121(7):1088-97.

Leffler DA, Neeman N, Rabb JM, Shin JY, Landon BE, et al. An alerting system improves adherence to follow-up recommendations from colonoscopy examinations. *Gastroenterology* 2011;140(4):1166-73.

Mosen DM, Feldstein AC, Perrin N, Rosales AG, Smith DH, et al. Automated telephone calls improved completion of fecal occult blood testing. *Med Care* 2010;48(7):604-10.

Taplin SH, Haggstrom D, Jacobs T, Determan A, Granger J, et al. Implementing colorectal cancer screening in community health centers: addressing cancer health disparities through a regional cancer collaborative. *Med Care* 2008;46(9 Suppl 1):S74-83.

The Community Health Worker Core Consensus (C3) Project: 2016 Recommendations on CHW Roles, Skills, and Qualities. Available at URL: <https://sph.uth.edu/dotAsset/55d79410-46d3-4988-a0c2-94876da1e08d.pdf>.

U.S. Preventive Services Task Force. Breast Cancer: Screening. Bethesda (MD): January 2016a. Accessed on 07/15/19. Available at URL: <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/breast-cancer-screening1>.

U.S. Preventive Services Task Force. Cervical Cancer: Screening. Bethesda (MD): August 2018. Accessed on 07/15/19. Available at URL: <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/cervical-cancer-screening2>.

U.S. Preventive Services Task Force. Colorectal Cancer: Screening. Bethesda (MD): June 2016b. Accessed on 07/15/19. Available at URL: <https://www.uspreventiveservicestaskforce.org/Page/Document/UpdateSummaryFinal/colorectal-cancer-screening2>.

White A, Thompson TD, White MC, et al. Cancer screening test use—United States, 2015. *MMWR* 2017;66(8):201-6.

Wilson FA, Villarreal R, Stimpson JP, Pagán JA. Cost-Effectiveness Analysis of a Colonoscopy Screening Navigator Program Designed for Hispanic Men. *Journal of Cancer Education*. 2015 Jun 1;30(2):260-7.

Disclaimer

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