

Examining the Cost-Effectiveness of Introducing Patient Navigation Services for Colorectal Cancer Screening Among Low-Income and Uninsured Individuals



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Objectives:

The colorectal cancer (CRC) screening adherence rate among the uninsured population in the United States (US) is lower than the overall rate across all US adults aged 50 to 75. This study aimed to investigate the cost-effectiveness of community health worker (CHW) navigation services in promoting CRC screening among low-income uninsured individuals in the United States.

Methods:

Utilizing data from the Texas A&M Cancer Screening, Training, Education, and Prevention (CSTEP) CHW program, we employed a decision model applied to a hypothetical cohort of low-income uninsured individuals to assess the cost-effectiveness of the CHW program in promoting colorectal cancer screening, compared to CRC screening under usual care (no CHW program), starting at age 45 or age 50.

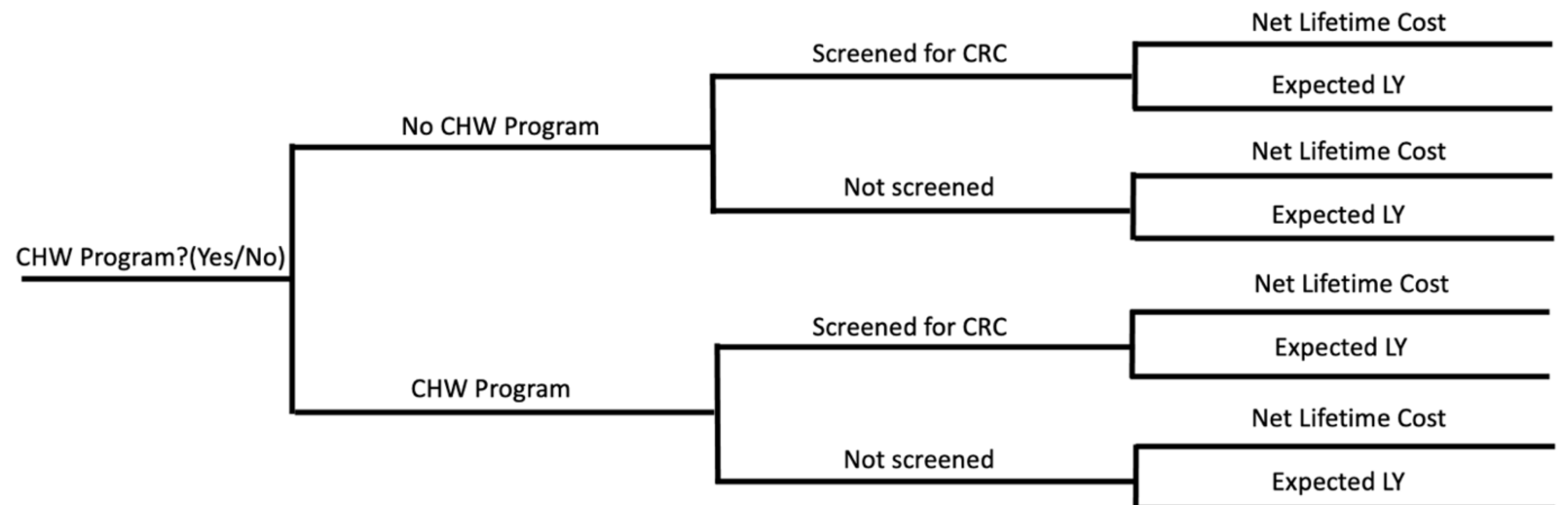


Figure 1: Structure of Decision Model

CHW program cost was based on CHW wages, program trainer wages, cost of materials, and outreach expenses. Incremental lifetime costs and life-years gained (LYG) from CRC screening (vs. no screening) were estimated from published literature using a weighted average across CRC screening modalities used in the US (colonoscopy, FIT, sDNA-FIT, and HSgFOBT). One-way and two-way sensitivity analyses focused on the impact on incremental cost-effectiveness ratios (ICERs) from changes in assumed costs and effectiveness of the CHW program (improvement in CRC screening rates) and changes in assumed life-years gained (LYG) and incremental lifetime CRC costs from increased CRC screening rates.

Results:

For the base-case scenario for screening starting at age 45 (Table 1), a 10 percentage-point improvement in CRC screening due to the CHW program is associated with incremental lifetime costs of \$101 and a 0.160 increase in LYG per person, compared to usual care, yielding an ICER of \$3,098/LYG (or \$2,143/LYG starting at age 50).

Table 1: Base-Case Model Results

Screening Strategy	LYG from CRC screening ^a	Lifetime cost ^a	Incremental LYG	Incremental Cost	ICER (CHW v no CHW)
Start Age 45					
No CHW program	0.127	\$5142	-	-	-
CHW program	0.160	\$5243	0.033	\$101	\$3,098
Start Age 50					
No CHW program	0.117	\$4999	-	-	-
CHW program	0.147	\$5063	0.030	\$64	\$2,143

A tornado graph (Figure 2) indicates the changes in estimated ICERs for key one-way sensitivity analyses. Estimated CHW program ICERs are at or below the traditional \$50,000/LYG willingness-to-pay (WTP) threshold across all one-way and two-way sensitivity analyses.

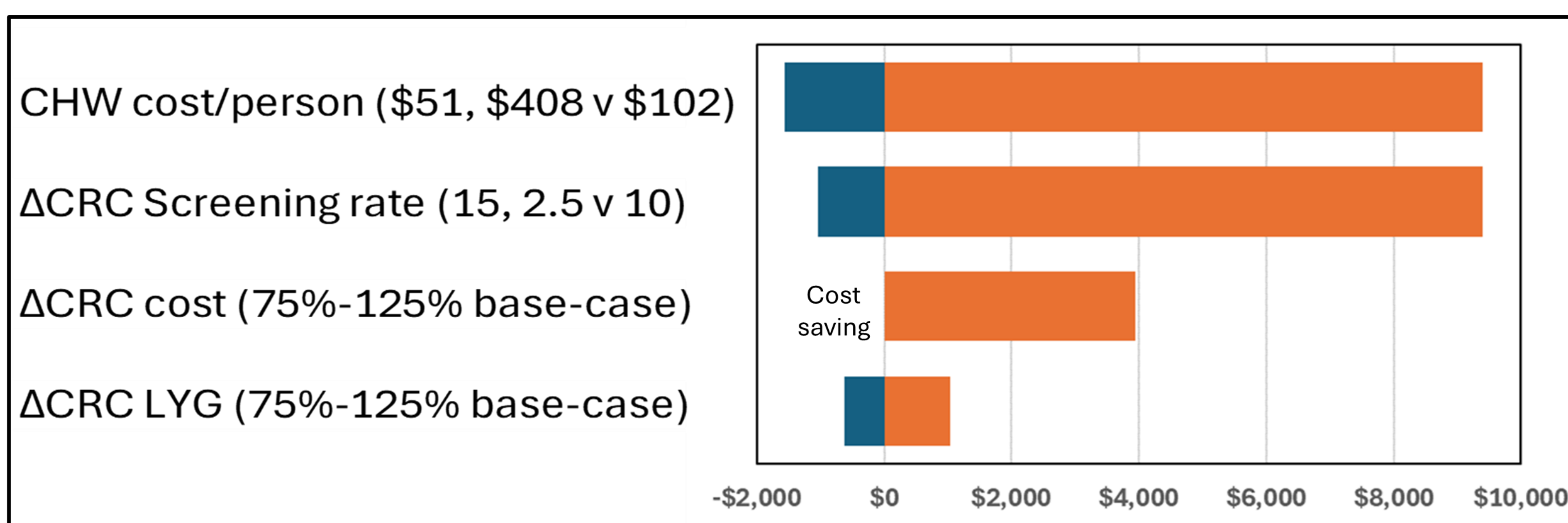


Figure 2: Changes in ICERs from Changes in Key Base-case Parameters

Limitations:

Program costs and effectiveness were estimated based on a pilot study in rural/medically underserved areas. The estimated incremental effects of CRC screening are based on national shares across CRC screening modalities, which may not represent shares for low-income uninsured populations, and modality shares for CRC screening may change over time as new modalities are introduced (e.g., CRC blood tests).

Conclusions:

Our findings underscore the importance of CHW navigation services to promote CRC screening for low-income uninsured populations to alleviate disparities in CRC outcomes. Further research should consider the characteristics of uninsured populations to refine CHW program interventions for specific underserved populations.

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