Preventive Medicine 112 (2018) 138–144

Contents lists available at ScienceDirect

Preventive Medicine

journal homepage: www.elsevier.com/locate/ypmed

Costs of community-based interventions from the Community Transformation Grants☆

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ARTICLE INFO

Keywords:
Chronic disease
Tobacco
Obesity
Costs and cost analysis
Cost allocation
Centers for Disease Control and Prevention

ABSTRACT

Limited data are available on the costs of evidence-based community-wide prevention programs. The objective of this study was to estimate the per-person costs of strategies that support policy, systems, and environmental changes implemented under the Community Transformation Grants (CTG) program. We collected cost data from 29 CTG awardees and estimated program costs as spending on labor; consultants; materials, travel, and services; overhead activities; partners; and the value of in-kind contributions. We estimated costs per person reached for 20 strategies. We assessed how per-person costs varied with the number of people reached. Data were collected in 2012–2015, and the analysis was conducted in 2015–2016. Two of the tobacco-free living strategies cost less than $1.20 per person and reached over 6 million people each. Four of the healthy eating strategies cost less than $1.00 per person, and one of them reached over 6.5 million people. One of the active living strategies cost $2.20 per person and reached over 7 million people. Three of the clinical and community preventive services strategies cost less than $2.30 per person, and one of them reached almost 2 million people. Across all 20 strategies combined, an increase of 10,000 people in the number of people reached was associated with a $0.22 reduction in the per-person cost. Results demonstrate that interventions, such as tobacco-free indoor policies, which have been shown to improve health outcomes have relatively low per-person costs and are able to reach a large number of people.

1. Introduction

Although evaluation of the effectiveness of chronic disease prevention interventions is critical, little is known about the costs required to implement them. Collecting data on resources required to implement effective interventions helps us learn how dollars invested compare with outcomes achieved. In 2012, the Office of Management and Budget released a memo indicating that, when funding grants, agencies should “increase the use of evidence-based practices” (Zientz, 2012) by making programs supported by stronger evidence eligible for higher funding levels. The memo called for new evaluations that systematically measure costs. Unfortunately, public health decision makers face limited resources and information to assess intervention effectiveness, cost, and cost-effectiveness. Furthermore, population-level prevention programs, such as nutrition signage in restaurants or access to tobacco-free environments, are sometimes viewed as having no direct costs because public health delivery strategies do not incur direct medical costs for individual program participants (Trust for America's Health (TFAH), 2009).

Most published economic analyses of community-based programs estimated costs retrospectively through interviews with study authors and cost imputation for resources used (Roux et al., 2008; Wu et al., 2011). In 2010, the U.S. Department of Health and Human Services funded a study to collect and analyze cost data prospectively for interventions aimed at improving population health (Honeycutt et al., 2016; Khavjou et al., 2014). In the current study, we applied a similar approach to the Centers for Disease Control and Prevention (CDC)-funded Community Transformation Grants (CTG) program (https://www.cdc.gov/nccdphp/dch/programs/communitytransformation/index.htm), to enhance our understanding of the costs to implement community-level prevention strategies designed to reduce tobacco use; obesity; and prevalence rates of heart disease, stroke, and related

☆ This report was prepared by RTI, under contract to the Centers for Disease Control and Prevention (CDC). The findings and conclusions of this article are those of the authors and do not necessarily represent the official position of CDC.

No financial disclosures were reported by the authors of this paper. There are no conflicts of interest.

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https://doi.org/10.1016/j.ypmed.2018.04.025
Received 9 October 2017; Received in revised form 3 April 2018; Accepted 16 April 2018
Available online 18 April 2018
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Table 1
Costs Per Person Reached by Strategy for Strategies Implemented in 2011–2014.

Strategy	N	Total costs	Number of people reached	Weighted mean	Unweighted mean	SD	Min	Max
Tobacco-free living								
Worksites, bars, restaurants: comprehensive indoor tobacco-free policies	7	$3,754,511	6,246,107	$0.60	$1.86	$2.03	$0.17	$5.65
Multi-unit housing: comprehensive indoor tobacco-free policies	21	$8,304,447	7,062,967	$1.18	$70.04	$89.72	$0.30	$286.50
School/campus: comprehensive indoor tobacco-free policies	2	$228,950	72,872	$3.14	$88.71	$121.68	$2.67	$174.75
Point of sale	1	$880,311	124,656	$7.06	$7.06	.	$7.06	$7.06
Healthy eating								
Reduce availability and consumption of unhealthy beverages	7	$2,066,125	6,640,244	$0.31	$34.52	$83.99	$0.01	$224.56
Schools: improve nutrition standards and policies in line with CDC; limit unhealthy choices	11	$3,921,479	1,668,618	$2.35	$11.15	$19.48	$0.71	$68.13
Schools: improve procurement policies	7	$1,282,203	2,111,970	$0.61	$4.38	$4.70	$0.15	$13.01
Early care/child care: improve nutrition standards and policies in line with CDC; limit unhealthy choices	5	$1,541,176	255,459	$6.03	$51.09	$56.38	$0.32	$143.29
Early care/child care settings: improve procurement policies	1	$135,028	16,000	$8.44	$8.44	.	$8.44	$8.44
Government agencies, other workplaces: improve nutrition standards and policies; limit unhealthy choices	7	$1,246,061	1,676,935	$0.74	$17.39	$20.96	$0.06	$57.99
Government agencies, other workplaces: improve procurement policies	3	$1,782,138	2,515,614	$0.71	$18.74	$25.43	$0.20	$47.73
Active living								
Schools: increase PA policies/practices in line with CDC; ensure that schools implement comprehensive PA policies meeting national PE and recess standards; provide PA opportunities beyond PE	8	$4,151,219	481,387	$8.62	$24.56	$39.14	$0.81	$113.88
Early care/child care: ensure implementation of policies/practices requiring regular PA consistent with recognized standards	2	$858,378	11,261	$76.23	$120.29	$74.28	$67.76	$172.82
Workplaces: ensure implementation of policies/practices that build PA into routines on or off the job	6	$2,698,635	103,980	$25.95	$32.95	$30.68	$2.80	$87.74
Community: increase adoption of comprehensive approaches to improve design for active transportation	16	$15,698,523	7,101,623	$2.21	$19.79	$44.72	$0.29	$154.02
Clinical and community preventive services								
Pharmacists to promote control of hypertension and high blood cholesterol	3	$249,405	10,377	$24.03	$50.58	$53.67	$18.37	$112.54
Community health workers, patient navigators	7	$4,515,697	1,983,242	$2.28	$91.61	$192.88	$1.39	$526.11
Health IT for provider prompts, feedback, patient communication and data gathering	10	$3,691,174	1,792,568	$2.06	$12.91	$26.80	$0.08	$85.40
Instituting/monitoring aggregate quality measures at provider and systems level (physician quality reporting system, HEDIS, NCQA)	4	$954,907	765,302	$1.25	$102.17	$190.05	$0.31	$387.14
Work with businesses to increase access/coverage of CPS for employees	2	$169,899	22,970	$7.40	$210.08	$296.18	$0.65	$419.51

Notes: N is the number of awardees that implemented the strategy and had the data on the number of people reached by the strategy. Weighted mean is the sum of costs divided by the sum of reach. Unweighted mean is the average of per-person costs across all awardees. CDC = Centers for Disease Control and Prevention; CPS = clinical preventive services; HEDIS = Healthcare Effectiveness Data and Information Set; IT = information technology; NCQA = National Committee for Quality Assurance; PA = physical activity; PE = physical education; SD = standard deviation.

conditions.

The CTG program supported state and local governmental agencies, tribes and territories, state or local nonprofit organizations, and national networks of community-based organizations to implement evidence-based community preventive health activities to reduce chronic disease rates, prevent the development of secondary conditions, and address health disparities. CTG was planned as a five-year program with awardees initially receiving approximately $1.00 per capita for their target population. However, in the 2014 Omnibus spending bill, Congress changed distribution of prevention funding; as a result, CTG was terminated after 3 years.

CDC provided CTG implementation awardees with a list of recommended evidence and practice-based strategies that awardees could implement. At the start of the program, CDC decided to focus program evaluation on 20 of those strategies because they were either 1) highest impact, 2) greatest potential reach, 3) implemented by multiple awardees, or 4) not represented well in the literature. Consequently, evaluation data were collected only for these 20 evidence and practice-based strategies (see Table 1 for list of the strategies). These strategies were categorized into four areas: (1) tobacco-free living, (2) healthy eating, (3) active living, and (4) clinical and community preventive services. Strategies represented a range of interventions that included policy, systems and environmental (PSE) changes. For example, the strategy "tobacco-free living" included efforts to increase the number of multi-unit smoke-free homes and increase the effectiveness of those policies through trainings or placement of signage. Examples of implemented strategies not selected for evaluation included tobacco cessation services, quitlines, provision of nicotine replacement therapy (NRT), breastfeeding, increasing affordability of healthy foods, supporting local food production, and limiting screen time. CDC did not fund direct services as part of CTG, thus all CTG strategies were aimed at creating or enhancing environments to make it easier for people to make healthy choices.

A cost study was conducted as part of the program evaluation to inform future program design, provide inputs for cost-effectiveness evaluations, and expand the evidence base for public health prevention. In this manuscript, we summarize findings from our analysis of the per-person costs of 20 community-based prevention strategies across 29 CTG implementation awardees. The 29 CTG implementation awardees that participated in the cost study included 22 states from the West, Midwest, South, and Northeast regions of the United States (see Fig. 1 for a map of participating states). Six of these awardees were funded to serve the entire state; 15 awardees were funded to serve large counties (population over 5000); and 8 awardees were funded to serve states excluding large counties (https://www.cdc.gov/nccdphp/dch/programs/communitytransformation/funds/programs.htm).

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