Reducing Tobacco Use and Secondhand Smoke Exposure: Quitline Interventions

Summary Evidence Table - Economic Evidence

Promotional Interventions to Increase Quitline Call Volume

Study	Study and Population Characteristics	Intervention Description	Effect Size	Program Costs	Full Economic Summary Measure* (\$2010)
Author (year): An et al. (2006) Study Design: Pre-Post Economic Method: Average Cost	to the use of NRT N=380 callers in the pre-NRT sample and N=373 in the post-NRT sample	for Action Against Tobacco (MPAAT) began providing nicotine replacement therapy (patches, gum) at no cost to helpline callers; participants enrolled in QUITPLAN's multi-session programme (includes four additional proactive calls)		Assume \$2003; CPI= 1.185 Pre-NRT costs determined by the number of individuals who receive single or multi-session counseling; Post-NRT, MPAAT costs include cost of providing phone counseling and the cost of providing free NRT. Increased cost per caller post-NRT (\$215.83) is due to an increase in the proportion of callers enrolling in multi-session counseling and the cost of providing free nicotine patch or gum	Pre-NRT: \$136.17 (\$161) Post-NRT: \$352.00 (\$417) Call volume increased 4X
Author (year): Bauer et al. (2006) Study Design: Pre-Post Economic Method: Average Cost	2 county region (Erie and Niagara counties) western New York State 18 years and older; daily smokers of 10 or more cigarettes per day	Evaluated promotion for free cessation products to induce smokers to call the New York State Smokers' Quitline. Press announcement urging smokers to call the quitline to get a voucher for a free 2-week supply of nicotine patches or gum (nicotine replacement therapy (NRT)); promotion ran for 4 weeks between July 10 and August 6,	(Median calls/day) Pre-NRT: 6 calls Post-NRT: 148 calls	Assumed \$2004; CPI=1.154 Costs of Free NRT voucher promotion: (1) Medication (\$24 per voucher) (2) Paid newspaper advertisement run in Art Voice (one full-page advertisement=\$1,100) *Note counseling costs not included	Total cost: \$51,304 (\$59,205) Call volume increased by ~25X

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	May 2004- August 2004	2003; voucher redeemable at a local drugstore chain (Eckerd Drugstores). Paid Media: The press announcement received wide-scale coverage in the local broadcast and print media, including The Buffalo News, which reaches more than 300,000 households in the region; a full-page advertisement promoting the free NRT voucher was run in Art Voice, a local weekly news and entertainment magazine, with a circulation of roughly 100,000. The offer of the free NRT voucher was timed to coincide with the implementation of New York State's Clean Indoor Air Act (banned smoking in most workplaces, including restaurants and bars); media coverage related to the Act mentioned the NRT voucher promotion.		By subtracting out the median number of calls to the quitline in the 2-week period before the NRT promotion (6.0 calls per day), study estimates the NRT voucher promotion generated 4,724 "extra" calls to the quitline during the 30-day promotion, yielding an incremental cost per call of \$11.	
Author (year): Cummings et al. (2006) Study Design: Pre-Post Economic Method: Average Cost	study reports on the results of 2,384 completed interviews, which represent an overall 61 percent response rate -18 or older; smoke more	received a copy of the quitline's <i>Break Loose</i> stop smoking guide, and an info sheet on local stop smoking programs. Some received counselingIn NYC, an effort was made to contact smokers w/in 4 wks of enrollment in the program to counsel about use of the meds and support effort to stop smoking; Fewer than half of the	(Average calls/week)—Pre-NRT: 4 weeks before promotion; Post-NRT: 4 weeks after promotion Pre-NRT/Post-NRT 2-wk voucher: 63/312 1-wk NRT: 79/393 2-wk NRT: 60/931	Assumed \$2004 Program costs included: Marketing, purchasing, and mailing out the free NRT, and the costs of registering and counseling smokers when they called the quitline. Total cost; cost/caller \$46,365; \$42 \$38,441; \$29 \$96,826; \$42 \$2.7 million; \$76	Total cost; cost/caller \$46,365; \$42 \$38,441; \$29 \$96,826; \$42 \$2.7 million; \$76 Call volume increased by ~5X to 15X

Study	Study and Population Characteristics	Intervention Description	Effect Size	Program Costs	Full Economic Summary Measure* (\$2010)
	cigarettes per day -Participants more likely to be female and slightly older on average (45 years vs 42 years) than the smokers in the general population.	, , ,	6-wk NRT: 552/7,213 Call volume increased by ~5X to 15X		

Provision of NRT (Compared to Paid Media) to Increase Quitline Call Volume

Study	Study and Population Characteristics	Intervention Description	Effect Size	Program Costs	Full Economic Summary Measure* (\$2010)
Author (year): Deprey et al. (2009)	Oregon; Pre-initiative (March to May 2004) ~920	For 2.5 months, Oregon Tobacco Quit Line (OTQL) offered one counseling call plus 2 weeks of free NRT to callers; call length ranged between 20 and 30	19.9% in Oregon adults,	Assumed \$2004; CPI=1.154 Promotional cost: \$37,000 for contractor time, \$3,600 for additional staff time for	Pre-initiative: \$341.70/call (\$394/call)
Study Design: Pre-Post	tobacco users registered for services;	minutes; patch dose tailored to participant's baseline smoking level (7, 14, or 21 mg NRT).	of adult	planning and implementation, and \$8,000 for postage and supplies.	Post: \$7/call (\$8/call)
Method: Average Cost	Post launch (Oct to Dec 2004): 6,491 tobacco users registered Pre; post	-Requested health plans and insurers to offer additional free patches to their subscribers beyond what the ORQL made available and to lower barriers to		Total cost for the promotion: \$48, 600 in comparison with the estimated annual cost of \$1.4 million for paid media	
	Female 66.6%; 63.3% Mean age 40.3; 44.3 White 86.7%; 89.1%	treatment, such as reducing or eliminating co-pays. -Integrated other social systems, such as community-based organizations and		With paid media (1.4 milllion), from January to September 2004, the ORQL enrolled 4,097 callers. In contrast, the initiative enrolled 6,939 callers in 3 months with only 3.5 percent of paid media budget.	

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	Hispanic 8.4%; 5.6% Uninsured 21.5%; 30.5% High school or less 56.2%; 54.2% Some college 36.0%; 35.3% College graduate or more 7.8%; 10.5%	county-based food banks, into the initiative's marketing plan. - "Tell a Friend," were inserted into food boxes during the month of November; free patch cards were also inserted into ORQL quit materials -Paid for media (TV commercials) during the preinitiative period, but not during the initiative; used earned media: 15 TV news spots, 21 radio spots, and 13 newspaper articles all within the first week of the initiative; newspapers reached a total of 161,630 subscribers; Data for radio stations and TV news spots were unavailable.		Post Launch: cost per call ~ \$7 Pre-initiative, cost per call ~\$341.70	
Author (year): Fellows et al. (2007) Study Design: Pre-Post Economic Method: Average Cost and Cost- Effectiveness	have no health related contraindications	Oregon tobacco cessation quitline Counselors trained in cessation support techniques and motivational interviewing discuss quit plans and motivation, setting a quit date, relapse prevention and community resources for quitting; also offer printed self help materials. In October 2004, TPEP initiated a strategy to increase the utilization and effectiveness of the Oregon tobacco cessation quitline, while reducing television and radio advertising to promote the quitline. The "free patch initiative" added a 2-week supply of free NRT (while supplies lasted) for tobacco users registering for counseling and used an "earned" (unpaid) media promotion to generate calls to the quitline. Earned media used press releases and a news conference to gain publicity from local print, TV and radio news org. Promotion activities also included	Self-reported 30-day abstinence at 6 months -assumed all eligible non-participants (excluding callers with invalid phone numbers) were treatment failures (intent to treat). Free patch initiative registrants: 15.7% Pre-initiative period: 8.2%	-Program level perspective; \$2004; CPI= 1.15 -Used data available at 6 months to project the incremental cost effectiveness at 12 months. -Costs for each ad included quarterly talent fees, tagging, duplication and other costs (mainly shipping). Talent fees are charged for a 13-week period regardless of how often the ads appeared. -Cost of one 30-minute telephone counseling session was \$91. Free patch initiative recipients also received two weeks of NRT that cost \$42.82 (including shipping). -Cost estimates included annualized quitline promotion and intervention (counselling and	\$174/ additional quit (\$201); \$86/additional LYS (\$99) Avg cost: \$3738/quit (pre) (\$4,315) \$1050/quit (post) (\$1,212)

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	who registered Oct-Dec 2004. Follow-up: 6 months	working with local healthcare providers, public and private insurers and public health agencies to spread the info to smokers	-For all quitters, study estimated LYS using age specific remaining life expectancy, relative risk of death for current smokers and the percentage of future smoking attributable deaths that can be prevented by quitting; LYS were discounted to the present value using a real social discount rate of 3%	\$174 more per additional quit (2,250,484-1,970,085)/(2142- 527)= 174 \$86 more per additional LYS. -Compared to paid media promotion for a single telephone	
Author (year): Maher et al. (2007) Study Design: Pre-Post Economic Method: Average Cost	Washington state; 18–29-year olds Compared quitline callers between July 2004 and December 2004 (pre; n=114) to callers between January 2005 and May 2005 (post; n=218) Funded, in part, by CDC	Washington Quitline (QL) offered a five-call proactive counseling service that included free NRT for 8 weeks to 18–29-year-olds willing to set a quit date within the next month or needing help staying quit.	The 7-day quit rate at three months increased from 21% before the enhancement to 38% during the enhancement (p=0.014). The increase among older callers may have been caused by an increase in earned media resulting from the promotion	Assume \$2004; CPI=1.15 **Limited cost info** Less money spent on QL promotions during the enhancement period (\$1.1 million, including about \$120,000 for promotions focused on the enhancement) Previously during 2004 spent \$1.4 million.	Post: \$1.1 million (\$1.3) post Pre: 1.4 million (\$1.6)

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			of the enhancement, and also from the older callers hoping to obtain free NRT		

Mass Media Interventions to Increase Quitline Call Volume

Study	Study and Population Characteristics	Intervention Description	Effect Size	Program Costs	Full Economic Summary Measure* (\$2010)
Author (year): Burns et al. (2010) Study Design: Pre-post Economic Method: Cost- Effectiveness	Sept - Nov 2007 Latino population (n=243) Non-Latino (n=527) callers responded to follow up survey 7 month follow up	Analyzed data from Colorado QuitLine callers before (April–August 2007) and during (September–November 2007) the media campaign. A commercial media firm under contract to the Colorado State Tobacco Education and Prevention Partnership designed the Spanish Latino QuitLine media campaign. The firm convened 6 focus groups, separately in English and Spanish, among low-income Latinos across Colorado. The groups focused on tobacco related attitudes, knowledge about the QuitLine, and preferences regarding cessation messages. An ad campaign was developed that delivered positive, supportive, and encouraging messages about quitting through actors portraying key family members. Spots for this study aired in Spanish language only on predominantly Spanish-language television and radio and in Latino-attended movie theaters.	6-month abstinence (prolonged	Assumed \$2007; CPI=1.05 Spanish-language component of the Latino media campaign cost \$145,900 for production and \$91,287 for airtime, a total of \$237,187. The cost per additional Latino caller during the campaign was \$352. The cost per additional quit among Latinos during the campaign period ranged from \$1036 (based on 7-day abstinence) to \$1882 (based on 6-month abstinence).	Cost/additional Latino caller: \$352

Study	Study and Population Characteristics	Intervention Description	Effect Size	Program Costs	Full Economic Summary Measure* (\$2010)
		The campaign urged audience members who smoked to call the Colorado QuitLine, which offered free NRT and 5 proactive coaching sessions; The campaign aired in the fall of 2007 (September–November). Urban Colorado counties received the majority of campaign spots, but local health departments statewide were encouraged to supplement the campaign with local earned or paid media of their own.	29.6% vs 41.0%, P=.07; 6-month abstinence: 9.6% vs 18.8%, P=.04.		
Author (year): Farrelly et al. (2007) Study Design: Pre-post Economic Method: Average Cost	television, radio and print advertisements to generate calls	Monthly media expenditures were matched to monthly call volume based on the counties in each broadcast/circulation area. Expenditures on all television and newspaper advertisements were included regardless of focus (for example, smoking cessation and the dangers of secondhand smoke) because all advertisements included the quitline telephone number. Radio expenditures were limited to advertisements for which promoting the quitline was the main objective.	-Radio expenditures positively correlated with call volume; Newspaper expenditures were marginally significant (p=0.065) -The elasticities suggest that dollar for dollar television expenditures generated more call volume than radio and newspaper expenditures (0.151 vs 0.037 and 0.022). However, effectiveness of television expenditures	-Hypothetical increase \$1000 increase for television would lead to a 0.87% increase in mean expenditures. Multiplying this increase by the corresponding elasticities leads to a 0.1% increase in call volume (0.1% = 0.87% 60.151). A \$1000 increase for radio (153% increase) and print (129% increase) would lead to 5.7% (0.037 X 153%) and 2.8% (0.022 X 129%) increases in call volume, respectively. The \$1000 increase in average monthly television, radio and print expenditures is expected to increase the average monthly number of calls from its current level by 3, 11 and 5 calls, respectively. At the current levels of expenditures, the most cost effective advertising investment	Mean monthly expenditure: TV expenditures: \$114,917 (\$124,297) Radio expenditures: \$652 (\$705) Newspaper expenditures: \$777 (\$840)

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			diminished as the expenditures increased (The square of television expenditures was significant, indicating that as the level of expenditures increased, the positive effect they had on call volume diminished)	would be in radio, followed by print and television.	
Author (year): Mosabek et al. (2007) Study Design: Pre-post Economic Method: Average Cost	Oregon Nov 98-March 2002	Compared different advertising strategies in prompting tobacco users to call the Oregon tobacco quitline (OTQL). Data collected on advertising buys and calls to the OTQL from November 1998, when the OTQL became operational, to March 2002.	Calls from TV ads ranged from 67 to 1,318 Calls from radio ads ranged from 127 to 522	Assumed \$2002 Cost for TV ads ranged from \$8,568 to \$231,914 Cost for radio ads ranged from \$65,367 to \$212,814 Advertising costs included only the cost of the air time and not the costs of producing the advertisement or obtaining the rights to an advertisement; the costs for obtaining rights to these advertisements were small compared to media placement costs.	Cost/call ranges from \$70- 1629 (TV ads) (\$85-1975); \$332-1053 (radio) (402-1,248)
Author (year): Wilson et al. (2005) Study Design: Pre-post	New Zealand Maori (indigenous population)	Study examined the impact of 4 television advertising campaigns on calls to a national Quitline service by Maori (New Zealand's indigenous population).	6 month campaign compared with the prior 18 months.	Assumed \$2003, PPP=1.53 CPI= 1.185 Television advertising expenditure directed at Maori was estimated to be \$NZ 304,560 (552,183)	\$30 to 48 (\$54 to 87)/caller

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Economic Method: Cost- Effectiveness	N = 2319 TVC (television campaign) placements 2002 and 2003	TVC being shown was analyzed for 1482 TVC placements; excluded 631 TVC placements that were not shown at just a regional level) and TVC placements for which ethnicity data for	Maori callers registered with the Quitline at a 15.2% greater rate (866 per month average versus 735 for total registrations). Over 2 year time period, 15, 486 new Maori callers registered with the Quitline (21.3% of all new registrations, and an estimated 8.2% of all Maori adult smokers).	The advertising cost per new registration by a Maori caller was estimated to be \$30 to \$48.	

Use of Provider Referral Program to Increase Quitline Call Volume

Study	Study and Population Characteristics	Intervention Description	Effect Size	Program Costs	Full Economic Summary Measure* (\$2010)
Author (year): Wolfenden et al. (2008)	surgical	Assess cost of referral of smoking patients to a proactive quitline service for postdischarge cessation support.	Of the 43 patients referred to the quitline, 31	CPI=1.013 -Staff time (according to industry standards) required to offer	\$1.75/referred patient (\$1.77)
Study Design: Observational Economic Method:	Australia.	A fax-based procedure was developed by the research team to refer patients to the New South Wales (NSW) quitline to receive free proactive telephone counseling by trained	(72%) were contacted by the researchers at follow-up. Of these patients,	postdischarge quitline referral to all patients, to complete the quitline fax forms for patients agreeing to be referred, and to fax the forms to the quitline	

Study	Study and Population Characteristics	Intervention Description	Effect Size	Program Costs	Full Economic Summary Measure* (\$2010)
Average Cost	group participants n=43 (64%) were referred to the quitline.	counselors after discharge; the quitline offered patients up to six counseling calls over a 3-month period, making up to three attempts to contact a patient for each scheduled call	23 (74%) received a postdischarge call from the quitline. The average number of quitline calls received by these 23 patients was 2.3 (SD=1.5).		
Author (year): Bentz et al. (2006) Study Design: Observational Economic Method: Average Cost	175 providers (physicians, residents, nurse practitioners, and physician assistants) in 17 primary care clinics and two teaching clinics that use a standard electronic medical record	Observational study describing two methods (fax referral and providing a brochure) to connect private physician offices with a state-level quit line in Oregon. -State quit-line service includes a single-session, proactive telephone call, along with the mailing of tailored self-help material and information about local cessation resources. Fax referral to the quit line was promoted for patients who agreed to receive a proactive call, and were seriously interested in quitting in the next 30 days.	Of the 15,662 smokers identified in 19 primary care clinics, 745 patients were referred to the Oregon Tobacco Quit Line during the study period (included both fax and brochure groups). Of these, 496 (67%) were fax referred; the quit line was able to successfully contact 292 (59%), and of those 233 (90%) accepted a one-time tobacco-cessation intervention	Assume \$2003; CPI= 1.185 Baseline cost for development, implementation, and training of the quit-line referral process approximately \$18,864.	Total cost: \$18,864 (\$22,354) \$15/referral (\$18) \$22/smoker counseled (\$26) If costs for clinical staff time and the provision of food during the training, the costs increased by \$10 to \$16 (\$12 to \$19) respectively

Study	Study and Population Characteristics	Intervention Description	Effect Size	Program Costs	Full Economic Summary Measure* (\$2010)
			from a quit-line counselor.		

Active Telephone Recruitment to Increase Quit Call Volume

Study	Study and Population Characteristics	Intervention Description	Effect Size	Program Costs	Full Economic Summary Measure* (\$2010)
Author (year): Tzelepsis et al. (2009) Study Design: N/A Economic Method: Average Cost	New South Wales N=48,014 (households selected); 4304 were unreachable; Of 43,710 reached, 40,702 were ineligible. N= 3008 eligible households, 51.9% (n=1562) of smokers contacted actively by telephone agreed to receive cessation support; September 2005 and April 2007	1562 adult daily smokers randomly selected from the electronic NSW telephone directory. The proportion of smokers and the cost per smoker recruited were examined.	offered proactive telephone counseling	Assumed \$2007 Cost for linking smokers to quitlines (active telephone contact) -service provider's perspective; Total recruitment cost: (AU\$110,952) \$92,460 US (\$97,161) Cost consisted of preparation of and mailing letters, phone call(s) for recruitment, programming, and item completion required to provide cessation support.	Cost per smoker recruited: \$59 (\$62)

<u>Abbreviations</u>

CPI, consumer price index PPP, purchasing power parity SEK, Swedish krona USD, U.S. dollar