



Increasing clinician participation in tobacco cessation by an implementation science-based tobacco cessation champion program

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Abstract

Background We designed a process to increase tobacco cessation in an academic center and its widely distributed network community sites using clinical champions to overcome referral barriers.

Methods In 2020 a needs assessment was performed across the City of Hope Medical Center and its 32 community treatment sites. We reviewed information science strategies to choose elements for our expanded tobacco control plan, focusing on distributed leadership with tobacco cessation champions. We analyzed smoking patterns in patients with cancer before and following program implementation. We evaluated the champion experience and measured tobacco abstinence after 6 months of follow-up.

Results Cancer center leadership committed to expanding tobacco control. Funding was obtained through a Cancer Center Cessation Initiative (C3I) grant. Multi-disciplinary leaders developed a comprehensive plan. Disease-focused clinics and community sites named cessation champions (a clinician and nurse) supported by certified tobacco treatment specialists. Patient, staff, clinician, and champion training/education were developed. Roles and responsibilities of the champions were defined. Implementation in pilot sites showed increased tobacco assessment from 80.8 to 96.6%, increased tobacco cessation referral by 367%, and moderate smoking abstinence in both academic (27.2%) and community sites (22.5%). 73% of champions had positive attitudes toward the program.

Conclusion An efficient process to expand smoking cessation in the City of Hope network was developed using implementation science strategies and cessation champions. This well-detailed implementation process may be helpful to other cancer centers, particularly those with a tertiary care cancer center and community network.

Keywords Tobacco cessation · Cancer Center Cessation Initiative · Certified tobacco treatment specialists

Cary A. Presant and Kimlin Ashing are co-lead authors.

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Introduction

Tobacco use is the single most prevalent cause of preventable disease, morbidity, and premature mortality [1]. Continued smoking after a cancer diagnosis is causally linked to cancer-specific and all-cause mortality [2]. Major obstacles in implementing smoking cessation are clinician failure to refer to smoking cessation interventions, delay in recommending smoking cessation, and/or failure to prescribe cessation medications. [3, 4]

City of Hope (COH) National Medical Center is a member of the National Comprehensive Cancer Network. At

COH, tobacco cessation had remained underutilized, with poor physician engagement. Leadership committed to improving tobacco cessation as a core strategy in cancer control and as the fourth pillar of cancer therapy [5, 6]. To fund increased tobacco cessation efforts to cancer patients, the National Cancer Institute established the Comprehensive Cancer Center Initiative (C3I), with funding through the Cancer MoonShot program [7]. COH used this funding to perform this implementation and research.

Implementation science is a discipline which studies methods or techniques used to enhance the adoption, implementation, and sustainability of a clinical program. A panel of experts used a modified Delphi process to generate a comprehensive catalogue of 73 discrete strategies recommended to introduce programs into healthcare [8]. This analysis was extended using concept mapping to identify clusters of implementation strategies to enhance introduction of clinical projects [9] which focused on changing infrastructure, developing stakeholder interrelationships, supporting clinicians, training and educating stakeholders, providing interactive assistance, adapting and tailoring to the context, engaging consumers, using evaluative and interactive strategies, and utilizing financial strategies. The cluster “develop stakeholder interrelationships” included identification and training of champions.

We applied these strategies to improve our tobacco control program and specifically to increase clinician referrals to tobacco cessation resources. We detail here our development of a more effective tobacco cessation program emphasizing the use of multi-disciplinary and multi-level tobacco cessation champions in disease-focused clinics in an academic center and in its network of community offices.

Methods

The COH enterprise consists of an academic medical center in Duarte CA and 36 community practice sites throughout southern California. The enterprise cared for 141,025 patients in 2020. A tobacco use screen was developed to determine the pattern of tobacco use across the enterprise and it was implemented by clinic nurses during patient evaluations. Current tobacco use was reported in 6.3% of patients, which we felt was an area of need in patient care and was a rationale for the expansion of tobacco control activities.

The President of COH and the Chief Scientific Officer/Director of the COH Comprehensive Cancer Center supported expansion of tobacco control activities across the COH enterprise by providing COH internal funding of the tobacco control program and promoting tobacco cessation through meetings and newsletters to staff. This initial funding and promotion enabled the tobacco control program to

initially expand its services even before the C3I Moonshot federal grant. The Department of Population Science was tasked to develop and implement an expanded tobacco control plan in January 2020. A multi-disciplinary task force was formed and included population science researchers, pulmonologists, a certified tobacco treatment specialist (CTTS), a nurse practitioner, medical and surgical and radiation oncologists, a Clinical Informatics specialist, the Vice President of Nursing, a tobacco control coordinator, and administration leaders.

The task force performed a needs assessment by discussions with clinical and administrative staff and patients. The objectives were to identify perceived obstacles in tobacco control and cessation referral, resources needed to increase cessation activities, and factors which would motivate positive behavioral changes in clinical staff and patients.

The task force used the needs assessment to identify new components necessary for expanding tobacco cessation activities and applied implementation science-based strategies [8, 9] to expand tobacco control activities. Because leadership at all levels of clinical activities was needed, the task force developed a process of introducing both physician and nursing tobacco cessation champions into each disease-focused clinic at the academic center in Duarte and in each community site. It identified resources to support those champions and defined roles and responsibilities of the tobacco cessation champions. We focused on clinician cessation activities since we felt that patient engagement would be higher with their oncologist continuously monitoring their smoking status and medication compliance, as well as treating smoking recurrences.

Patient smoking status and patient referral to tobacco cessation were evaluated during 2020 before the tobacco plan was implemented and 2021 after implementation. Current and recently quit smokers were characterized by clinical practice location, disease, and demographics. Champion attitudes toward the program were evaluated with an anonymous survey using a Likert 5-point scale.

Statistics

Group comparisons were performed using the Chi-squared statistic.

Results

During pre-program expansion, the COH tobacco control program included pulmonologists, an electronic health record general smoking history, tobacco use registry of active smokers, a staffed tobacco cessation clinic with a CTTS to treat patients, a smoking cessation clinic in-person tobacco cessation support group, and referrals to national

resources, including SmokeFree.gov, SmokefreeTXT, and National Quitline, the California Smokers Helpline (Quitline), and Los Angeles county online LAquits.com.

Tobacco use prior to expanded cessation efforts indicated considerable variation in smoking exposure (Table 1). 80.8% of all patients completed the tobacco use screening assessment in 2020. Tobacco use was 6.3% overall, but less in the academic center in Duarte 4.5% compared to all community sites 7.4% ($p < 0.001$). Through the electronic medical record, a “Best Practice Advisory” prompt was given to clinicians to consider referral to smoking cessation whenever patients reported tobacco use. However, for the period of September 2020 to December 2020 before the smoking cessation program expansion, an appropriate referral was made for smoking cessation in only 1.4% of all smokers. Patients at community sites were slightly more often referred (1.6%) compared to 1.2% of smokers at the academic center ($p < 0.001$). Patient refusal was more common at community sites (6.9%) compared to only 0.9% at the academic center ($p < 0.001$). Clinicians usually closed the “Best Practice Advisory” without taking action (92%). Only very few patients (0.4%) were inappropriate to refer (because they had already been referred by prior physicians or were only receiving end of life symptom care).

The needs assessment identified obstacles in delivering tobacco cessation resources across the COH enterprise. Although an important component of tobacco control was the tobacco cessation clinic, which had been operating since 2011, there was underutilization evidenced by lack

of referrals. Clinicians, most often focused on antitumor therapies and clinical research, usually referred patients back to their primary physicians for smoking cessation. Since some motivated clinicians referred active smokers to the COH tobacco cessation program, increased clinic-centered leadership with clinician motivation was expected to result in improved tobacco cessation. These barriers existed at the closest points of patient engagement, the disease-focused clinics at the academic center, and at each of the community cancer treatment sites. Additional resources were identified that were needed to expand smoking cessation (Table 2).

An element which we added was recruiting and designating tobacco cessation champions in each disease-focused clinic and each community practice site. COH leadership assigned the task of designating champions to the director of the community practice program and the Chief Nursing Officer who requested input from community site physician leaders and disease team leaders in Duarte. We named both a clinician (physician or APP) and a nurse oncologist in each clinic and each community site. The selected champions advised on continued development of the program and performed the evaluations. Champions in the community network sites were in the treatment centers daily. In the academic center, nurse champions were in the clinics daily, and physician champions were in the clinic 1–4 days per week. Champions were chosen based on their leadership and communication skills, not on their days in clinic. Although some physician

Table 1 City of Hope patient tobacco use and tobacco cessation referral patterns in 2020

	COH enterprise wide	Academic Center in Duarte	All community sites	Antelope valley community site
No. patients	141,025	51,099	86,026	10,697
Tobacco use screen completed	113,948	41,134	72,814	9,948
% screen completion	80.8%	80.5%	83.8%	93%
Tobacco users	7,234	1,846	5,388	1,063
% tobacco users	6.3%	4.5%	7.4%	10.7%
Patients referred for tobacco cessation	1.4%	1.2%	1.6%	2.7%
Gender male		53.3%		44%
Female		46.7%		56%
Age < 65		58.5%		60%
65 or older		41.5%		40%
Race/ethnicity				
Caucasian		60.2%		40.5%
Black		8.8%		29.7%
Hispanic		21.9%		16.2%
Asian		8.2%		5.4%
Patients refused referral	2.6%	0.9%	3.9%	6.9%
Clinician closed prompt without action	92%	96%	89.6%	81%
Patients inappropriate to refer (prior cessation treatment or end of life care only)	0.4%	0.4%	0.4%	0.9%

Table 2 Resources developed to increase tobacco cessation

Resource	Implementation by program leadership	Implementation by information technology	Implementation by cessation team staff
Establish Champion leaders in disease-focused clinics and community treatment sites	+		
Enhanced smoking assessment: tobacco use screen and periodic tobacco use assessment		+	+
Two certified tobacco treatment specialists with training	+		+
Multilingual tobacco cessation brochure for patients			+
Smoker registry		+	+
Best practice advisory and personalized order preference to simplify referrals		+	
Telehealth visit support for clinical visits and cessation visits		+	
Smoker virtual support groups	+	+	+
Efficient documentation of visits and billing		+	+
Promotional education for clinicians and patients			+
Newsletters for champions and clinicians	+		
Training program for clinicians and nurses regarding cessation resources and medications (nicotine replacement and urge suppression)	+		+
Clinical Intervention Tobacco Cessation task force meetings	+		+
Sustainable financial support for program	+		

champions were not in the clinic daily, they still provided leadership and education for their clinician colleagues even when not in clinic.

Training of the champions and clinicians was assigned to tobacco control program staff. Personnel to support the champions were provided by two new CTTs, one dedicated to the academic campus and the other dedicated to community site support. Champion and clinician training for tobacco cessation services were designed around the 5 A's (ask, assess, advise, agree, and assist) and 5 R's (relevance, risk, reward, roadblocks, and repetition) [10, 11]. The task force developed a tobacco cessation brochure (translated into languages prevalent in the large catchment area of southern California) to be a resource for clinicians and patients. Training modules were developed for champions and clinicians and were supplemented by short meetings. At each community site or disease-focused clinic, champions interacted with clinical colleagues at all levels (physicians, APPs, nurses, medical assistants, and staff) to emphasize the importance of cessation efforts, remind staff of the resources available to them and to their patients, and motivate referrals. The champions also reported experiences of their practice sites back to the program leaders to evaluate necessary changes.

Clinical Informatics coordination and information technology analyst support were key elements for the expanded tobacco control program. A registry of patients who were smokers or recent quitters was expanded to provide champions and clinicians with the lists of patients who needed tobacco cessation interventions. Electronic health record (Epic Systems; Verona WI) documentation templates were

developed to facilitate visit charting and clinical decision support rules (Epic Best Practice Advisories). To simplify clinician ordering of cessation services, a preference order list entry ("favorite") was suggested to clinicians as "ambulatory referral to smoking cessation."

Telehealth services were expanded to perform clinical patient visits, smoking cessation visits, and patient support group visits. The involvement of information technology to expand telehealth services to smoking cessation programs was especially important because of the COVID-19 pandemic as well as the geographically dispersed locations of community sites. Simple guides for uniform medication prescriptions (nicotine replacement therapy or urge suppression) were provided to champions and clinicians.

Funding was required to enable these resources to be sustainably created. This was accomplished using funds from the Comprehensive Cancer Center Support Grant, from a National Cancer Institute Cancer Moonshot Supplemental Support Grant in the C3I program and by billing for smoking cessation services to patient insurance (using CPT billing codes 99406 and 99407 as appropriate). To provide equity and decreased discrimination, COH charity care funds were additionally used to provide patient support and medication assistance when insurance authorizations were denied or when patient lacked insurance coverage.

The task force defined the roles and responsibilities of the champions (Table 3). Newsletters ("Moonshot Shoutouts") were used as short, one-page informational and promotional communications to keep clinicians and all staff motivated to

Table 3 Tobacco cessation champion roles and responsibilities and support resources for champions

Role and responsibility	Support by program leadership	Support by program staff
Assist clinicians and staff in how to offer tobacco cessation services	+	
Promote clinician use of evidence-based 5As and 5Rs models to deliver brief tobacco interventions as part of the routine standard of practice	+	+
Promote staff to reevaluate patient smoking status at every visit (or at least once within 24 months per CMS electronic health record meaningful use criteria)		+
Encourage clinicians/nurses to support patients' attempts for tobacco cessation		+
Facilitate clinician referral to quitlines and/or COH cessation services		+
Promote cessation visit documentation using smartphrases		+
Promote appropriate billing for cessation support using codes 90406 or 90407	+	+
Offer to help answer questions for physicians/APPs/nurses	+	+
Identify and communicate problems in implementing cessation to the COH tobacco cessation team		
Encourage clinic/community site manager/administrator to maintain the stock of tobacco cessation brochures		+
Urge clinicians to interface with referring primary care physicians also caring for the smoking cancer patients	+	
Participate (when interested) in tobacco cessation research projects, presentations, and publications	+	
Identify and communicate problems in implementing cessation to the COH tobacco cessation team	+	

support patients with tobacco cessation referrals, medications, and assessments.

The task force also defined short-, intermediate-, and long-term goals (Table 4). This allowed prioritization of workflow and budgets. Because of the multi-disciplinary nature of the staffing and leadership and considering the different needs of the academic center as distinct from community sites, planning during the short-term phase required frequent meetings and coordination.

In order to evaluate the acceptance and operation of this program, implementation was performed by pilot

introduction in five COH academic center disease-focused clinics (lung cancer, head/neck cancer, radiation oncology, hematology, and genitourinary cancer), in one community site with the highest percentage of smokers (Antelope Valley, 10.7% smokers) in which there was also a dedicated CTTS and in one community site in which there was no dedicated CTTS (Newport Beach). This allowed subsequent comparison of the effectiveness of different levels of resource allocation to support clinicians and champions in different clinical environments.

Table 4 Goals of tobacco cessation project workflow and outcomes

Project schedule	Project elements	
Short term	Senior administrative commitment to project	
	Assignment of responsible department	
	Selection of project lead and committee	
	Funding of project	
	Needs and obstacles assessment	
	Resource assessment	
	Information technology support plan	
	Choose outcome metrics for pilot	
	Intermediate term	Site-specific staffing including champions
		Training of specialists, champions, clinicians, and nurses
Development of patient education aids		
Long term	Pilot implementation	
	Evaluation of metrics from pilot	
	Decision on feasibility of expansion and making modifications as necessary	
	Expansion of implementation enterprise-wide	
	Staffing and training for expansion	
Evaluate metrics from expansion and consider future funding needs		

Results of the expanded cessation initiative have been positive. The completion of the tobacco use survey increased from 80.8% in 2020 preceding the expanded cessation initiative to 96.6% in the first 6 months of the initiative (January 1, 2021 to June 30, 2021) (Table 5). Importantly the pilot program resulted in increased referrals to tobacco cessation. Throughout COH, referrals for cessation rose from 45 during the 4 months preceding the initiative to 210 for the first 4 months of the initiative (increase 367%). This increase was observed both in the academic site (increased referrals from 30 to 162 or 440%) as well as in the Antelope Valley community site served by champions and a CTTS (increased referrals from 8 to 23 or 188%).

Types of counseling services provided were compared. In the academic site, 98% of patients received telephone/telehealth or in-person counseling, of which 14.4% was in-person. In contrast in the Antelope Valley site which had a dedicated CTTS and 2 champions, of the 83.3% of patients who received counseling by telephone/telehealth or in person, 58.3% had in-person counseling.

We surveyed cessation champions in the pilot for their attitudes about the program (Table 6). This indicated positive attitudes about champion training and support, response of colleagues to champion advice, and champion attitudes toward professional satisfaction and increasing leadership skills. Most importantly, 73% would recommend being a champion to other clinicians or nurses.

We repeated the tobacco use survey in patients who had completed 6 months of follow-up. 125 patients (33.7%)

in Duarte and 40 patients (70.2%) in Antelope Valley had completed the 6-month follow-up. Abstinence from tobacco use for > 8 days (at 6 months) was reported by 34 patients (27.2%) in Duarte and 9 patients (22.5% in Antelope Valley ($p=0.56$). Abstinence for > 1 month (at 6 months) was reported by 30 patients (24%) in Duarte and in 7 patients (17.5%) in Antelope Valley ($p=0.39$). Because of this success, the pilot program is currently being expanded enterprise-wide.

Discussion

Improving tobacco control is an important element in national cancer priorities promoted by the National Cancer Institute, Centers for Disease control, and Food and Drug Administration [12, 13]. Communicating our institutional experience may help in developing strategies to accomplish that goal.

We felt that use of evidence-based implementation science strategies was important to facilitate successful completion. These principles were originally developed predominantly influenced by Veteran's Administration administrators and clinicians for general medical programs. Our selection of the most important components included the development of multi-specialty and multi-level tobacco cessation champions.

The term champion was coined by Schon in 1953 [14] applied to product champions for weaponry in the military. The concept of clinical champion was introduced in 2001 [15], subsequently reviewed [16, 17]. At COH, roles of tobacco cessation champions are knowledge brokers for oncology specialists and change agents influencing clinical decision-making, incorporating cessation as part of the clinical plan and improving incorporating cessation attitudes of clinical staff. Miech et al. identified 37 categories of health-care champions [17] and COH focused on categories of program champion, project champion, change champion, clinical practice champion, and team champion. Miech et al. showed that champion-led groups significantly outperformed

Table 5 Comparison of cessation referrals before and after the expanded cessation initiative

	Before initiative (%)	After initiative (%)
Completed tobacco use screen	80.8	96.6
Referred for tobacco cessation	1.4	5.1

Table 6 Survey of champion attitudes toward the champion program

	Agree, strongly agree (%)	Neutral (%)	Disagree, strongly disagree (%)
My training was good	64	9	9
Support of me as a champion was good	64	18	9
Colleagues responded positively to my advice	73	9	9
My colleagues improved their cessation efforts	64	9	18
My professional experience as a leader increased	64	18	0
Being a champion has been professionally satisfying	73	9	9
I recommend being a champion to other clinicians/nurses	73	9	9

non-champion control groups in 4 out of 4 randomized trials reviewed.

COH felt champions would be optimally implemented locally in the clinics where treatment plans were developed for individual patients. This is consistent with Damschroeder et al. who concluded that multiple champions were required to change people's behaviors and that inter-professional coalitions working together were necessary [18].

Our COH champion program integrated activities of the cancer center, department of population science, tobacco cessation clinic, disease-focused clinics, and community treatment sites whose work cultures were dissimilar. The need to account for differing social-professional environments, variable clinical guidelines and norms, and dissimilar communication connectedness was emphasized by Rogers [19]. We recognized challenges at COH in professional fragmentation ("silos") of clinical specialties, different time constraints, dissimilar norms of patient volumes and quality metrics and research emphasis, and variable needs for academic credit. Multi-level champions in each clinic and community site overcame these barriers.

Because patients often interacted primarily with nurses during office visits or during cancer therapy, COH developed a physician or APP as well as a nurse champion at each disease-specific clinic and each community site. The communication among task force leaders, physicians, APPs, and champions promoted collective diffusion of tobacco cessation interventions and support. Champions also urged oncologists to interface with referring primary care physicians to provide another support mechanism for smoking cancer patients.

Using champions in primary care practices increased referral of smokers to a state-sponsored quitline 3.4-fold [20]. Among national C3I-supported cancer programs, several have used leaders or champions. At University of California at Davis, some champion physicians were referring for cessation [21]. At Case Western Reserve, program site leaders and clinical champions were involved in building capacity and training [22]. However, the details of responsibilities and training of champions in tobacco cessation programs and results have not been well described.

The COH program has extended prior knowledge by detailing the process and using champions in specialty and subspecialty environments with differing specialty "silos," across both academic and community sites, and in a geographically dispersed clinical enterprise.

The COH program for increasing tobacco control in the Clinical Intervention Tobacco Cessation task force extended prior experience in tobacco control [23, 24]. The COH program extended recommendations of the Agency for Healthcare Research and Quality (AHRQ) to cancer centers and networks. Our initial evaluations of COH academic center and community site programs for tobacco cessation and lung

cancer screening showed the need for program expansion. Our prior research, showing increased tobacco/vape-shop density in lower socioeconomic sections of the Antelope Valley community [25], caused us to locate one of the champion pilot programs in the Antelope Valley site which also had higher smoking rates.

Study limitations included: this was performed in one center and results need to be confirmed; results were over the first 6 months and need to be extended to longer follow-up; the champion survey was anonymous, so correlations of attitudes with cessation referrals could not be assessed; and results of the expansion academic center wide and network wide should be subsequently analyzed and reported. We did not have an analysis of cessation services according to tumor type for this project.

Conclusion

Tobacco cessation is an integral part of clinical care [5, 12, 23, 24]. The COH research will help enable clinical networks to develop the processes necessary to assist clinicians in providing effective tobacco cessation services, especially by incorporation of multi-disciplinary and multi-level cessation champions. This may be especially important in cancer centers with extended community network sites.

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Data availability The data are available for review at City of Hope Medical Center.

Declarations

Conflict of interest The authors have no disclosures to make and no conflicts of interest.

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