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Clinical Effort Against Secondhand Smoke Exposure (CEASE): Development of Framework and Intervention

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Abstract

Objective—To describe a novel process and present results of formative research to develop a pediatric office intervention that uses available systems of care for addressing parental smoking.

Methodology—The scientific development of the intervention occurred in three stages. In stage one, we designed an office system for parental tobacco control in the pediatric outpatient setting based on complementary conceptual frameworks of preventive services delivery, conceptualized for the child healthcare setting through a process of key interviews with leaders in the field of implementing practice change; existing Public Health Service guidelines that had been shown effective in adult practices; and adaptation of an evidenced-based adult office system for tobacco control. This was an iterative process that yielded a theoretically framed intervention prototype. In stage two, we performed focus group testing in pediatric practices with pediatricians, nurses, clinical assistants, and key office staff. Using qualitative methods, we adapted the intervention prototype based on this feedback to include five key implementation steps for the child healthcare setting. In stage three, we presented the intervention to breakout groups at two national meetings of pediatric practitioners for further refinements.

Results—The main result was a theoretically grounded intervention that was responsive to the barriers and suggestions raised in the focus groups and at the national meetings. The CEASE intervention is designed to be flexible and adaptable to the particular practices' staffing, resources, and physical configuration. Practices can choose materials relevant to their own particular systems of care (www.ceasetobacco.org).

Conclusions—Conceptually-grounded and focus group tested strategies for parental tobacco control are now available for implementation in the pediatric outpatient setting. The tobacco control intervention development process might have particular relevance for other chronic pediatric conditions that have a strong evidence base and have available treatments or resources that are underused.

Keywords

smoking; tobacco; pediatrics; family practice; parent; smoking cessation; secondhand smoke; environmental tobacco smoke; tobacco control; quitline; telephone counseling

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Introduction

In summarizing the past 20 years of research on the health effects of secondhand smoke (SHS), the 2006 Surgeon General's Report on the health consequences of involuntary exposure to tobacco smoke emphasizes that SHS is a major cause of disease, with no safe level of exposure.[1] Exposure puts children at risk for asthma, bronchiolitis, sinusitis, bacterial respiratory infections, decreased lung growth, decreased exercise tolerance, cognitive deficits, and sudden infant death syndrome.[2–4]

Children are exposed to higher levels of SHS than adults.[1] Even as a growing number of state regulations protect workers, regulations do not protect millions of non-smoking children from exposure to tobacco toxins in their own homes and vehicles, indicating that involuntary smoking will be a persistent and significant cause of morbidity and mortality in the years ahead.[1] While SHS exists in many different environments that children may frequent, nowhere is it more dangerous than in their own homes where they spend most of their time. Over 30% of children in the United States currently are exposed to SHS at home.[2, 5, 6]

In child healthcare settings, assisting smoking parents to quit can yield great benefit for the family. Quitting smoking adds an average of seven years to a parent's life,[7] improves the health of all household members, eliminates the majority of SHS exposure of the children, reduces tobacco-related poor pregnancy outcomes, eliminates the greatest cause of house fire mortality, improves the financial resources of the family,[8] and decreases teen smoking initiation.[9–11] Unfortunately, SHS exposure of children is assessed sporadically and almost never addressed with parents in an evidence-based fashion.[3, 12–15]

Finding appropriate and acceptable opportunities to intervene with parents who smoke is a challenge. Parents may lack health insurance and often lack a primary care clinician.[16,17] Parental smokers often see their *child's* healthcare clinician more frequently than their own, with an average of over four visits per year, and 11 pediatric well-child visits in the first two years of a child's life.[18, 19] Therefore, child healthcare offices are in a key position to influence, in a repeated and consistent manner, parents who are willing to address their smoking.[20] However, not all parents are ready to make a quit attempt at any given visit to the pediatric office. The frequency of visits and the fact that many are for SHS exposure related problems creates numerous opportunities for tobacco control interventions, increasing the likelihood of a visit coinciding with high readiness to quit smoking, an important predictor of successful quitting.[17] The tobacco policy of the Ambulatory Pediatrics Association states the critical importance of implementing smoking cessation evidence-based strategies for all family members in child healthcare settings.[20]

Despite the existence of national guidelines on the subject,[21, 22] few effective smoking cessation interventions have used the pediatric outpatient setting to reach adult smokers. While some pediatric offices have systems to prompt clinicians to screen for parental tobacco use, none systematically employ current PHS treating tobacco use and dependence guidelines to treat parents. National rates of parental tobacco control service delivery are low within child healthcare settings. Only half of parents in a national survey about clinician involvement in this issue reported being asked whether or not they smoke and fewer than half were advised to quit.[13] Fewer than 10% of parental smokers had cessation medication prescribed, and despite the availability of free quitlines in every state, fewer than 1% were enrolled in a quitline or any program to help them quit.[14]

No prior studies have used currently available systems of care to cue and support the major counseling and treatment components of the current PHS guideline. Successful efficacy trials have relied on external study staff to deliver the interventions.[23–25] Implementation of parental tobacco control guidelines remains elusive in real-world pediatric practice.

The aim of this paper is to describe a novel process to develop a pediatric office intervention that uses available systems of care for addressing parental smoking. Specifically we explore the development of an intervention using currently available systems of care to address parental smoking in the child healthcare setting that employs, in combination, evidence-based brief smoking cessation counseling, proactive referral to free regional and national "quitlines", and pharmacologic management of tobacco dependence. Furthermore, we aim to detail how, based on our focus group research, we mapped out five key implementation steps identified by practices, framed the intervention from the practice perspective, and designed a flexible implementation process that can be tailored to the needs of each practice. Finally, we hope that elucidating the steps involved in developing the intervention, known as CEASE, the Clinical Effort Against Secondhand Smoke Exposure, will help inform the development process of other systems change interventions for the pediatric setting. The office-based pediatric intervention development process described in this paper may also have specific relevance and generalizability to other chronic conditions such as attention deficit hyperactivity disorder, asthma, parental depression, and obesity.

Methods

Overview of intervention development

Our goal was to use existing conceptual frameworks, guidelines, and office-based tools for tobacco control in the adult setting and develop a conceptually driven pediatric office intervention for addressing parental smoking. As shown in Figure 1, the scientific development of the intervention occurred in three stages: stage one—conceptual framework and initial prototype; stage two—prototype modification and adaptation through focus group testing; stage three—prototype refinement through feedback at two national pediatric meetings.

Stage one. Conceptual framework and initial prototype

Integrating conceptual frameworks to address parental tobacco control in child healthcare settings: Many theoretical models have aided in understanding how to implement office systems in diverse practice settings.[26–33] Still, implementing best-practice guidelines has been an ongoing challenge in primary care practices, especially for services outside those provided for symptom-driven diagnoses.[34–36] While no single model adequately combines system characteristics, patient-care processes, and techniques for achieving change,[37] the Solberg and Wagner models form a complementary, comprehensive, and comprehensible framework for outpatient pediatric office systems change. Wagner's Chronic Care Model includes characteristics of community and organizational domains to improve preventive care and Solberg's Prevention System focuses on specific processes of care delivered to patients within an identified practice. The Chronic Care Model describes the elements of an effective clinical system for ensuring effective patient and clinician interactions, while the Prevention System fills out the types of behaviors that should occur between patient and clinician.

The Solberg and Wagner models are consistent with the recommendations of current Public Health Service Guidelines and helped drive the development of our intervention through a series of key informant interviews with leaders in the field of implementing practice change.[38] Using an iterative process of key informant interviews with members of the American Academy of Pediatrics Tobacco Consortium, we systematically adapted each construct of the Solberg and Wagner frameworks for parental tobacco control in child healthcare settings. Approximately 20 interviews were conducted by one of the team members (JPW). Key informants were asked how the constructs of the Solberg and Wagner frameworks needed to be adapted for tobacco control in child healthcare settings. After suggested adaptations were made, these adapted constructs were presented back to the key informants for an informal face-

validity review. The key informants had only minor editorial suggestions during the face-validity review of the integrated framework.

Current Pediatric Guidelines: Previous work has given child healthcare clinicians specific guidelines for evidence-based parental tobacco control intervention but did not address how to implement those recommendations.[3] We used these same current guidelines and presented specific office strategies for implementation within child healthcare settings. The 5As (Ask, Advise, Assess, Assist, Arrange) remained at the core of our evidence-based intervention prototype, however, significant reframing occurred as a result of focus group testing. (Stage 2)

Adaptation of evidence-based adult office system for tobacco control: In 2001, health plans in Massachusetts collaborated with the Massachusetts Department of Public Health to create and promote jointly a new quitline initiative for adult primary care, QuitWorks.[39] Components of the adult office system that we needed to modify for our pediatric prototype intervention included 1) the smoking status screening questionnaire, which needed to change so that it identified not just the patient's smoking status, but all household sources of SHS exposure; 2) the method for documenting SHS exposure in the patient's chart, which needed to change so that documentation could be separated from vital signs and recorded in the chart of each child in the household; 3) method for inviting the accompanying parent's self-assessment (of readiness to quit, interest in pharmacotherapy, and/or enrollment in QuitWorks), which we wanted to be routine without imposing undue interpersonal strain between the parent and clinician; 4) method for prescribing pharmacotherapy, which we needed to streamline to include standard dosing options; and 5) educational brochures, which we needed to revise to accommodate low-literacy readers and to include SHS messaging for parents.

Stage 2. Prototype modification and adaptation through focus group testing

Eight practices in Massachusetts: Using a series of 8 pediatric practice focus groups, we elicited practicing pediatrician and key staff responses to our proposed office system change strategy (our intervention prototype) in order to refine the components for a range of varied outpatient pediatric office settings. We designed the focus groups and a semi-structured interview guide based on well described qualitative research methods, [40, 53] incorporating a discussion of constructs (e.g. screening, counseling, referral system) that have been shown to be important components of office systems in other settings. [31–33, 41–43] Just as in other qualitative studies,[40] the hope was that the focus groups would enrich our understanding of key themes, in this case what the key implementation steps were, how they needed to be operationalized, and how to present them to practices.

Recruitment: In the Spring of 2004, we identified pediatric practices located within a 20-mile radius of Boston from a list of practices available from the Department of Public Health. Further eligibility requirements were that the practice had to have at least one pediatrician with greater than six months of full-time experience and agreed to have at least one practice pediatrician participate in the focus group. Recruitment involved a three-step process: 1) a telephone call, 2) email message, and 3) follow-up letter. Of the 23 eligible practices, 8 (35%) agreed to participate in the focus groups within a 2-week enrollment window, at which point target enrollment was reached and closed.

Participants and Setting: Focus groups were conducted at each practice site and included pediatricians (one to three per practice) and other key clinical and office staff as identified by the pediatrician team. Office staff included the office manager, nurse practitioners, clinical assistants, and secretaries. We welcomed office staff with different roles so that we could get a complete picture of the office workings and potential intervention feasibility. Having a wide

variety of positions represented maximized our opportunity to create flexible strategies for a range of pediatric practice situations and staffing environments.

Data Collection: Focus groups lasted for approximately 90 minutes; all groups were audiotaped. Participants were given no monetary payment for their time and participation but were provided lunch. All procedures and data collection forms were approved by the Massachusetts General Hospital Institutional Review Board. A semi-structured interview guide was developed based on current guidelines and proposed theoretical underpinnings. The guide was piloted at a Boston-based practice to assess content, length, and understandability and then finalized and used for all group interviews. The guide contained questions about a) present individual and clinic-wide practice patterns for parental tobacco control; b) perceived barriers for individual and clinic-wide delivery of cessation services for parental smokers; c) strategies for implementing each element of the proposed intervention prototype and d) recommendations for modifications and refinements of the proposed intervention prototype. Groups were co-facilitated by a pediatrician (JW) and health educator (AB). Participants were asked to be frank and were assured that the purpose was not to achieve consensus but rather gather data to illustrate all of their impressions. Facilitators used probes to obtain comprehensive collection and to clarify responses.

Data Analysis: All session tapes were transcribed. Consistent with our goals for the focus groups, we conducted thematic content analysis using two research assistants under the supervision of our qualitative methodologist (EP).[44] The two coders separately reviewed transcripts and entered data into a Microsoft Access© database. We coded transcriptions for key words, refined the content and parameters of the codes, and once thematic saturation was reached, coded categories within each descriptive theme relating to practice patterns, perceived barriers, implementation strategies, and specific modifications and refinements of the proposed intervention. [45] Reviewers also coded for frequency, intensity, and extensiveness.[46, 47] At each analysis phase, the two coders compared their results and resolved discrepancies. Statements characteristic of the sentiment of the group were highlighted by the coders and selected by facilitators. An expert review of the data was conducted (JW, EP). No systematic differences were noted between the urban and suburban sites, and so we combined their responses.

To assure the trustworthiness of our findings, many steps were taken to maximize dependability (consistency) and credibility (the truth of findings). We incorporated the process of triangulation by involving a multidisciplinary research team (investigator triangulation), including different types of practice sites (data triangulation), and comparing our findings to the conceptual framework models (theory triangulation).[48] The facilitators used a standardized interview guide and discussed their impressions and debriefed with the research team following each session; co-facilitators took notes at each session to record interactions, nonverbal language, and environmental factors. The two coders thoroughly reviewed, separately and then together, all of the transcribed data. A facilitator reviewed every transcript to assure that the interview content was complete and accurate. Coders carefully examined data that seemed discrepant, unexpected, or unclear and compared all coded data to the transcript text, undergoing an iterative evaluation process until agreement was reached.

Stage 3. Prototype refinement through feedback at two national pediatric meetings—At two national pediatric meetings in 2004, we performed 60-minute small-group breakout sessions with a total of 50 pediatricians at each meeting to get national practitioner key informant reactions to our revised intervention prototype. After introducing the intervention and materials in structured fashion, the facilitator recorded session feedback that included clinician reactions and suggestions for improving the revised intervention prototype. A formal qualitative analysis of this key informant national practitioner step was beyond the scope of this study.

Results

Stage 1. Initial prototype development

The main result from our work in stage one was a conceptually framed prototype intervention for delivering evidence-based parental tobacco control and lessons learned from the development process. In developing the intervention we consistently went back to the conceptual framework to guide our decisions. Table 1 presents the framework for preventive services delivery as conceptualized for parental tobacco control in pediatric settings. A key example of this process was in the adaptation of the proactive quitline enrollment form to function within child healthcare settings. (Figure 2) At least three essential modifications in the areas of screening, counseling, clinical information systems were made to the form based on our framework. First, we had to change the “patient information” because the smokers enrolled from the child healthcare offices would not be the patients. Second, we had to adjust the second A “advice to quit” to include an empowering smokefree home and car message. Third, we needed to create a space to indicate the smoker's relationship to patient.

A main lesson learned was to budget enough time for initial intervention development. Our prototype took over one year to create due to busy senior leaders in the field who needed time to evaluate iterations of our conceptual framework and creation of materials for the prototype that had the look and feel of a useable office intervention. Another important lesson learned in stage one was that intervention development is non-linear. New research, innovative approaches, and expert input can come in at any time. We chose to follow a relatively unconstrained path toward intervention creation that led to redoing materials many times over before we ever got to formal focus group testing. A finding demonstrating low rates of counseling for SHS exposure of children in cars led to the inclusion in the prototype of a novel parent counseling brochure that we had not anticipated including.

Stage 2. Main focus group findings

In total, eight practices with 6 to 10 participants each (64 individuals total) participated in the focus groups. This included 21 clinicians, 21 clinical assistants, 6 practice managers, and 16 administrative staff. Focus groups helped us understand 1) the lack of existing tobacco control systems within practices; 2) barriers to intervention implementation that needed to be addressed in the next version of the intervention; 3) how to conceptualize a series of implementation steps for the next version of the intervention; 4) how to document and follow parental smoking from visit to visit—a critical piece, unspecified in our prototype intervention. The main product from the focus group was a revised intervention prototype.

Existing systems. We asked focus group participants if there was a systematic method for documenting and monitoring parental smoking but we found that no office had such a system.

Barriers. When queried about barriers for individual and clinic-wide delivery of cessation services for parental smokers, the following issues emerged: parent is not the patient; time constraints; lack of counseling skills; no reimbursement for this service; lack of skill in medication prescription for smoking cessation; belief that addressing parental smoking may harm the therapeutic relationship with parents.

Implementation framework. When presented with the evidence base for smoking cessation and asked about how to implement it, the following framework emerged that mapped to the 5As themselves. Participants grouped the evidence-based intervention activities into five key implementation steps: 1. Identification and self-assessment of readiness to quit, willingness to use medication, and enroll in the quitline 2. Counseling 3. Referral 4. Medications and 5. Follow-up. Importantly, these steps are *how* pediatric offices conceptualized the

operationalization of the implementation of the 5As in their practices. The five implementation steps for pediatric practice map nicely to the content of the 5As themselves (see Table 2)

Suggested improvements. There was a lot of discussion about location of documentation of SHS exposure. For continuity of cessation support, participants decided that the documentation of smoking status should occur on the problem list. The research team had initially conceived of documentation of smoking status as a vital sign. However, we found out that vital signs are not done as part of every pediatric visit. Therefore, we changed to suggesting documentation on the problem list after the parent fills out an annual screener card. This documentation can be updated as the smoking status of family members changes. The other key observation was that problem list may be the only part of the medical record that is reviewed by other child healthcare clinicians in cross-coverage.

Stage 3. Feedback from national meetings

Approximately 50 pediatricians participated in breakout sessions at each of two pediatric national meetings. Pediatricians had the following main reactions and suggestions from the national meetings:

- Fully endorsed the parental tobacco control project, idea of creating universal documentation of SHS exposure of children and parental smoking, and linking parental smokers to outside quitline resources for more extensive counseling support
- Requested an implementation guide on a single page with suggested individuals who might perform key tasks
- Felt that the clinician counseling burden in the office needed to be minimal (3 minutes) in order not to disrupt office operations
- Requested that information on billing for services be incorporated into the intervention materials
- Approximately half felt uneasy about prescribing medications to parents in the context of the child's care—thought that should be optional
- A few expressed concerns that they would be sued for adverse outcomes if they prescribed medications for parental tobacco dependence

This step of soliciting reactions to our revised prototype also led to a change in how the intervention is presented to child healthcare clinicians. The program was initially billed as a method for getting parents to quit smoking. Pediatricians commented that their primary reason for wanting to adopt a tobacco control program was to protect their patients, the *children*, from secondhand smoke exposure. Therefore, we made a shift in how the program was presented and ended up with the Clinical Effort Against Secondhand Smoke Exposure (CEASE). Clinicians are introduced to the intervention in their reference frame rather than the preconceived reference frame of the research team.

Synthesis and description of CEASE intervention

The main result was a theoretically grounded intervention that was responsive to the barriers and suggestions raised in the focus groups and at the national meetings. We heard the persistent concern that a busy child healthcare clinician cannot spend the time to do a full motivational interviewing session,[49] especially since the parent is not the actual patient. However, the behavior of the parental smoker does directly affect the health and well-being of the child healthcare clinician's patient. Therefore, a reasonable and agreed upon expectation included spending a couple of minutes on cessation messaging and trying to motivate the parental smoker to follow-up with an expert. Enrolling smokers in multi-session telephone counseling

as an adjunct to office-based counseling ensures that smokers receive professional, evidence-based, ongoing counseling services that may not be possible otherwise.[21, 50] Although the intervention focuses on referral of smokers to free quitlines, the training manual also encourages knowledge and use of local program resources. While young parental smokers may not often be available for such face-to-facecounseling, its inclusion for highly motivated individuals may be important.[51]

The clinician counseling component consists of very brief motivational messaging[49] that is based on the parents' own concerns as well as potential teachable moments that may be cued by the child's illness. This approach has been well received by parental smokers in other studies.[17] A large majority of smokers tend to give higher satisfaction ratings to pediatric clinicians who address their smoking and offer help.[52–54] Most parents believe it is the responsibility of the pediatrician to counsel them on matters that affect their child's health, and that they should do more counseling regarding smoking cessation.[52, 53, 55, 56] The intervention includes a focused library of “halflets” (A halflet is a two-sided sheet of paper larger than a bookmark, smaller than a pamphlet, used for messaging) for handing out to parents that address specific concerns that may arise during the child visit. Messaging elements may include brief collaborative goal setting, personal barriers to quitting, problem-solving strategies, and social support.[37, 57, 58] One addition to self-management for the parental smoker includes focused strategies for reducing SHS exposure of the child, such as implementation of rules prohibiting smoking inside the home and car.[59]

Interested clinicians can review the rationale for focused SHS messaging including how the institution of strict smoking bans in the home and car can help address the problem of parental smoking in at least three ways. First, by making smoking more difficult, bans may help the cessation process for parents who smoke.[59–61] Second, bans may reduce smoking rates and cigarette consumption among youth.[59, 62–66] Finally, bans have been recommended to reduce the SHS exposure of children and spouses from a parent's smoking.[66–71] In reducing SHS exposure of children, recent studies using counseling and provision of written materials have proven successful.[72–76] A strict household and car ban on smoking also reduces the amount of tobacco toxin exposure children receive from non-parent relatives and other visiting adults.[77, 78]

In addition, the CEASE intervention includes a direct-to-consumer marketing approach through the posting of pharmacotherapy options for tobacco dependence treatment. These posters cue the parental smoker to discuss with the clinician what type of pharmacotherapy might be right for them. On the poster is a dosing guide for the quick reference of those clinicians who wish to prescribe pharmacotherapy so that they may avoid the embarrassment and extra time required to look up the requested medication to treat the parent's tobacco dependence. Some of the concerns raised in the focus groups, such as fear of legal action if clinicians treat parents have been partially answered by the American Medical Association and are now emphasized in the CEASE materials. The American Medical Association amended its tobacco control policy to “…support efforts by any physician to identify and treat tobacco dependence in any individual, in the various clinical contexts in which they are encountered…”[79]

The intervention developed in this study operationalizes the 5As in accordance with the most recent national guidelines[3, 21] and the recommendations gathered from our focus groups and national pediatric meetings. Practices can choose materials relevant to their own particular systems of care. The CEASE intervention is designed to be flexible and adaptable to the particular practices' staffing, resources, and physical configuration. We therefore present one possible option for how a pediatric practice might operationalize some of the intervention materials. (Table 3)

The CEASE intervention is available from the website www.ceasetobacco.org and can be used by offices from any state in the United States. The state-of-the-art CEASE materials are updated as new research advances the field of tobacco control. Rather than reproducing the current set of materials in this paper, the most up-to-date materials will be found on the website.

Discussion

In this paper, we presented the conceptual framework and development of the CEASE intervention, a program that is now available for use in child healthcare settings nationally. Successful tobacco control interventions in the child healthcare setting have usually relied on study staff to deliver the intervention. We have previously demonstrated the feasibility of engaging parents in a smoking cessation intervention at the time of a child's clinic visit.[17] High rates of program enrollment (63%), use of NRT(34%), and receipt of telephone quitline counseling (42%) in this prior study supported the hypothesis that a child's clinic visit is a teachable moment to address parental smoking cessation. Other prior studies have examined the efficacy and feasibility of specific tobacco control interventions with parents in child healthcare settings.[17, 23–25, 72–76, 80–87] Studies in these settings have tried to improve parental smoking cessation rates primarily through the use of counseling and provision of written materials with varied results.

Most recently, in a randomized trial of 303 parents seen at pediatric clinics, Curry et al.[25] conclusively demonstrated efficacy of an intervention to help parents quit smoking. The intervention consisted of brief cessation advice given by the pediatrician (usually lasting 1 to 5 minutes), a parent-tailored quit smoking guide distributed by the pediatrician, a 10-minute intervention with a practice nurse or health educator after the child's visit and up to 3 subsequent telephone calls from the practice nurse or health educator. At 12-month follow-up, 13.5% of the intervention group abstained as compared to 6.9% of the control group, resulting in an adjusted odds ratio of 2.77 (CI, 1.24–6.60), demonstrating that office-based and telephone counseling can be effective in increasing the quit rates of parents who smoke. However, external study staff were used to deliver the office-based and telephone counseling. The CEASE intervention employs currently available systems of care, quitlines, and office personnel to deliver the intervention without hiring additional office staff.

Specific features of the CEASE intervention that have been associated with improved tobacco control outcomes in adults include: materials that prompt delivery of the 5A's (Ask, Advise, Assess, Assist, Arrange), systematic and proactive enrollment of parental smokers in telephone counseling that will follow-up on clinician's advice to quit; explicit counseling of parents on the importance of strictly enforced smoking prohibitions within the home and car; and prescription of nicotine replacement therapy (NRT) for parental smokers in the context of the child's healthcare visit. The CEASE intervention follows the Public Health Service Guidelines by incorporating these evidence-based tobacco control treatments and practices.[21] The intervention is unique in using the child healthcare setting to cue and support all of these elements for parents who smoke.

Many components of the CEASE intervention could be implemented with the use of an electronic medical record, i.e. documentation of parental smoking could be entered directly into the electronic problem list. Electronic medical records are not used by the majority of pediatric practices in 2007; however, practices still need to implement evidence-based parental tobacco control. Fortunately, effective clinical information systems can begin as adaptations of currently employed office systems and later be incorporated into fully developed electronic systems as they become available. The CEASE intervention addresses the need for a universal screening system, the ability to proactively deliver care to those who screen positive for smoking, and to follow the individual's progress. The placement on the chart of a filled-out

self-assessment portion of the CEASE action sheet prompts the clinician to deliver the remaining four A's, including enrollment in telephone quitlines. In certain states, faxing the enrollment form to the state quitline will create a follow-up and tracking mechanism for the parental smoker that will yield a report back to the clinician about how the parent did in the program. The clinician will get a quarterly report listing how each smoker has done with the telephone counseling. All of these pieces together make up a clinical information system that holds promise for intervention with every smoking parent within a child healthcare practice.

In summary, articulating the steps involved in developing this intervention may help the development process of other systems change interventions for the pediatric setting. The tobacco control intervention development process might have particular relevance for other chronic pediatric conditions that have a strong evidence base and have available treatments or resources that are underused. Conceptually-grounded and focus group tested strategies for parental tobacco control are now available for implementation in the pediatric outpatient setting. Planned process evaluation of CEASE at the clinician level, the patient behavior level, and practice level will add substantially to the compilation of essential elements in the national tobacco control strategy for child healthcare settings.

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Abbreviations

CEASE, Clinical Effort Against Secondhand Smoke Exposure; SHS, secondhand smoke; NRT, nicotine replacement medication; PHS, Public Health Service.

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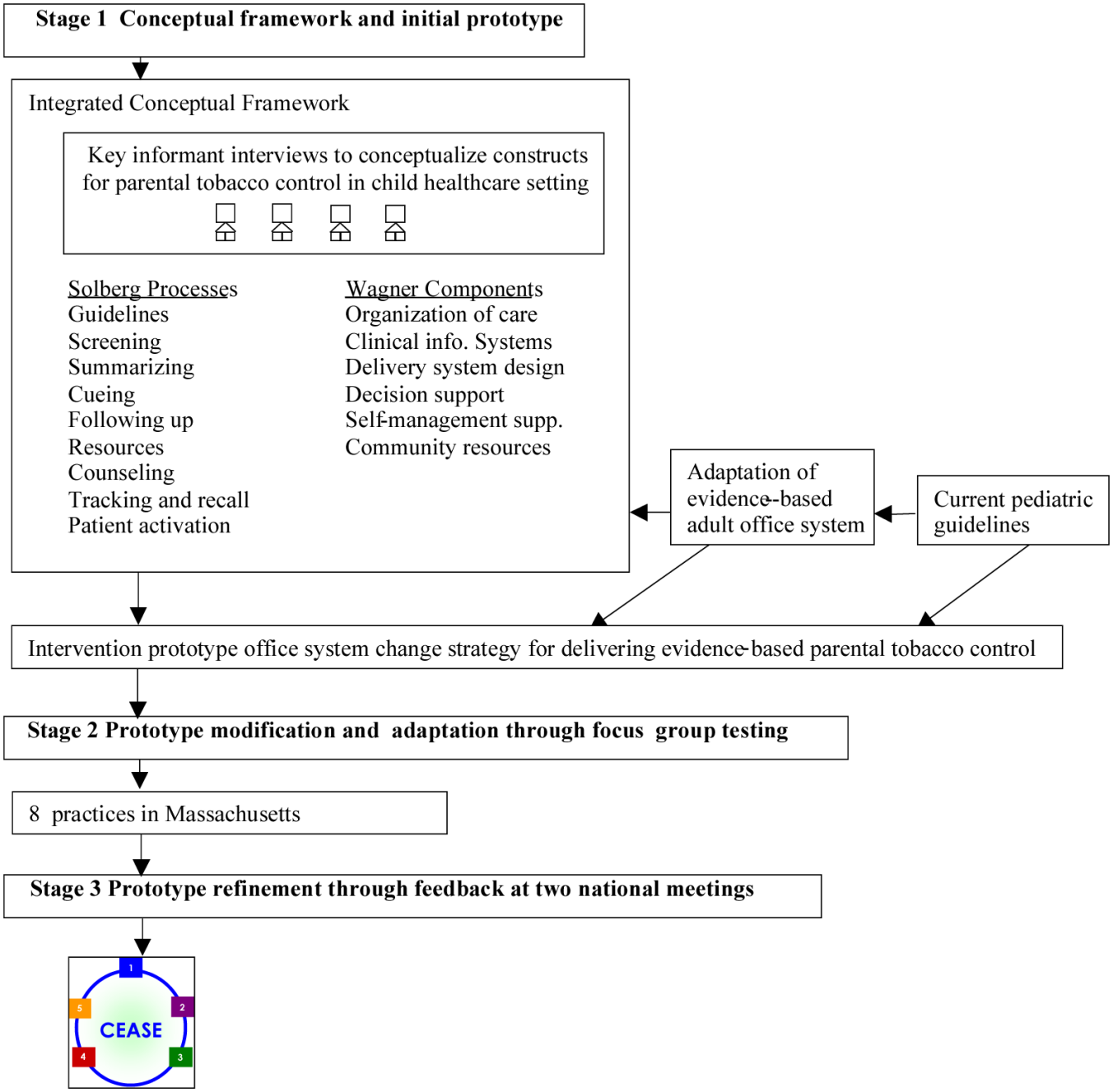

Figure 1.

Scientific development of the Intervention. In stage one, we designed an office system for parental tobacco control in the pediatric outpatient setting based on complementary conceptual frameworks of preventive services delivery that were conceptualized for the child healthcare setting through a process of key interviews with leaders in the field of implementing practice change; existing Public Health Service guidelines including the 5As framework[21] that had been shown to be effective in adult practices; and adaptation of an evidenced-based adult office system[39] for tobacco control. This was an iterative process that yielded a theoretically grounded intervention prototype. In stage two, we performed focus group testing in pediatric practices with pediatricians, nurses, clinical assistants, and key office staff. Using qualitative methods,

we adapted the intervention prototype based on this feedback to include five key implementation steps for the child healthcare setting. In stage three, we presented the intervention to breakout groups at two national meetings of pediatric practitioners for further refinements.

QUITWORKS

CEASE

Patient stamp, label, or info. (name, record number/DOB, date)

Tobacco Treatment Enrollment

A Collaboration of the Mass. Department of Public Health & Mass. Health Plans

Tobacco Treatment Checklist

ADVISE to stop: ❑ Stop-smoking advice given:
"I strongly advise you to quit smoking and to establish a smoke-free home and car, and I can help you."

ASSESS readiness to quit: ❑ Ready to quit ❑ Thinking about quitting ❑ Not ready to quit

ASSIST to quit: ❑ Brief counseling
Reasons to quit Barriers to quitting Lessons from past quit attempts Set a quit date, if ready Enlist social support

❑ Medications if appropriate
Nicotine Replacement (CIRCLE): patch gum lozenge inhaler nasal spray Other (CIRCLE): Bupropion (Zyban®/Wellbutrin SR®)

ARRANGE follow-up: ❑ Refer to Try-To-STOP TOBACCO Resource Center
by faxing the lower portion of this form toll-free to **1-866-560-9113**

Fax this part of the form to 1-866-560-9113.

TRY-TO-STOP TOBACCO RESOURCE CENTER OF MASSACHUSETTS **Massachusetts Resident Enrollment Form**

REFERRAL SOURCE/FOLLOW-UP CONTACT

referred by NAME ..... phone (area code + number)
FACILITY ..... ( )
ADDRESS ..... fax (area code + number)
( )

follow-up report contact | phone (area code + number) ( ) | fax (area code + number) ( )

QUITWORKS CLIENT

first name | last name | date of birth (month/day/year)

phone (area code + number) ( ) | May we leave a message? ❑ yes ❑ no | language preference (check): ❑ English ❑ Spanish ❑ other (specify).....

email address

client address | city | state | zip

primary insurance ❑ PCC Plan/Mass Health ❑ Blue Cross Blue Shield MA ❑ Boston Medical Center HealthNet ❑ Fallon ❑ Harvard Pilgrim
❑ Neighborhood Health Plan (NHP) ❑ Medicare ❑ Network Health ❑ Tufts Health Plan ❑ Uninsured ❑ Other .....

PEDIATRICS ONLY

relationship to patient: ❑ Mother ❑ Father ❑ other (specify).....

THE RESOURCE CENTER USUALLY CALLS THE CLIENT WITHIN 3 BUSINESS DAYS OF RECEIVING A REFERRAL. WHEN SHOULD WE CALL?

check all that apply: ❑ morning ❑ afternoon ❑ evening ❑ no preference

I, _____ , hereby authorize Try-To-STOP TOBACCO Resource Center of Massachusetts, (the "Resource Center"), and its representatives to disclose information about me to:

1) the American Cancer Society Quitline to the extent necessary to allow me to participate in its tobacco cessation counseling program; and
2) my primary care provider or other provider ("Provider") I designate to the Resource Center to the extent the Resource Center deems necessary to give my Provider an update of my progress in attempting to stop smoking.

I authorize my Provider to release the information on this enrollment form to the Resource Center for purposes of my participation in the QuitWorks program. I also authorize the Resource Center and its representatives to contact me upon receiving this referral from my Provider.

_____ _____
SIGNATURE OF QUITWORKS CLIENT OR CLIENT'S REPRESENTATIVE DATE

_____ _____
PRINTED NAME OF QUITWORKS CLIENT REPRESENTATIVE RELATIONSHIP TO CLIENT

CEASE action sheet:
QuitWorks enrollment

Figure 2.

Massachusetts example of quitline enrollment form adapted for child healthcare settings. Initially conceived for the Massachusetts "QuitWorks" program, the CEASE enrollment form now has national applicability due to the universal availability of quitline resources in the United States. State-specific CEASE forms reflect state-specific quitline names and enrollment methods. (attached to submission as a PDF)

Table 1

Conceptual framework for parental tobacco control in child healthcare settings*

Solberg Processes "IMPROVE Model" [31, 42, 43]	Wagner Components "Chronic Illness Care Model" [32, 33, 41, 88]
Providing Guidelines.	***Organization of Care.***
• Providing the current PHS guideline that the American Academy of Pediatrics Tobacco Consortium has endorsed[8, 21]	• Making tobacco preventive services a key goal of the organization
• Suggesting office-specific benchmarks for guideline adherence that the practice can endorse	• Ensuring that leadership is committed and visibly involved with parental tobacco control
	• Encouraging periodic measurement of key intervention components
Screening.	***Clinical Information Systems.***
• Screening for parents' smoking status, and for rules prohibiting smoking in the home and car	• Implementing a universal screening system (see Solberg Screening)
	• Delivering proactive care to those who screen positive for tobacco use
	• Following individual's and practice's progress over time
Summarizing.	***Delivery System Design.***
• Organizing and updating the information obtained in the screening process so that it is all in one place and easily reviewable by those needing to know the current tobacco-use prevention status of a particular parent	• Ensuring that the composition of the practice team89 can handle the key components of parental tobacco control and that every team member knows their responsibilities
Cueing.	***Decision Support.***
• Systematically cueing clinic staff and clinicians to address parental tobacco control and how to do it	• Providing evidence-based support for all aspects of the recommended intervention (see Solberg Providing Guidelines)
	• Establishing a prompting system to increase adherence to those guidelines(see Solberg Cueing)[58]
Following-up.	***Self-Management Support.***
• Communicating back to the practices results of preventive services delivered to parents by quitlines, along with the appropriate information and recommendations for follow-up visits with parents	• Offering parental smokers educational resources, skills training, and psychosocial support
Resources.	***Community Resources.***
• Organizing and maintaining parent education materials and enrollment forms needed by both patients and clinic personnel	• Improving performance of child healthcare systems by establishing linkages with effective parental tobacco control in the community and at the state level (quitlines)[90]
Counseling.	
• Assisting parents to make needed changes in their behavior through very brief and focused messaging to parents who smoke	
• Specifying messages needed to address teachable moments relevant to the parent-child dyad, such as using child health characteristics such as ear infections and asthma exacerbations as part of the longitudinal messaging process	
Tracking and Recall.	
• Documenting tobacco control services delivery to enable provision of patient centered follow-up counseling at subsequent visits	
Patient Activation.	
• Encouraging parents to take greater responsibility for their own smoking behavior particularly in the context of the child's well-being and specific health concerns	

* The Solberg and Wagner models provided a rich framework for our adaptation of current state-of-the-art tobacco control strategies available for adult practices into the pediatric office setting. Personal behavior change theory can be thought of in the context of the *Counseling* process of Solberg's framework and the *Self-management support* component of Wagner's model. These behavior change constructs are derived and often operationalized in terms of conceptual models of the smoking cessation process, including the stages of change model, motivations for smoking cessation, and self-efficacy theory.[91, 9293, 949549] The 5As framework in the current Public Health Service Guideline, adapted for pediatrics as part of our intervention, also addresses elements of systems, clinician, and personal behavior change.[21] The 5As have been used previously in conjunction with Wagner's model to optimize the care of other chronic conditions.[96, 97]

Table 2

Mapping the CEASE implementation steps to the 5As

Implementation Step	The A's
Step 1. Identification and self-assessment Identify smokers with the CEASE annual card during the office visit and document smoking status. Ask those who smoke to fill out the CEASE action sheet: self-assessment screener at each visit. Document no smoking policy in the home and car.	Ask and Assess
Step 2. Counseling Talk with smokers about tobacco use and establishing a strict no smoking policy in the home and car. For those who are not ready to quit, give a “Think About It” halflet.	Advise and Assist
Step 3. Referral Complete the Cease action sheet: quitline enrollment with smokers who are ready to quit. Give those who enroll a “Welcome” halflet.	Assist
Step 4. Medication Prescribe or recommend pharmacotherapy, if appropriate, for relief of withdrawal symptoms and to aid cessation.	Assist
Step 5. Follow-up File the CEASE action sheet and review before each visit. Talk with those who smoke about smoking at each visit until the family is smoke-free.	Arrange

Table 3

Possible Operationalization of the CEASE Intervention Materials* in Practice

• A parent and child arrive at the practice and check in, if smoking status is unknown, a CEASE annual card with attached CEASE Sticker serves as the brief screener
• If the smoker is indeed present at the visit, then the parent fills out the self-assessment portion of the CEASE Action Sheet and returns it to the receptionist (See below for when smoker is not present)
• The receptionist places the self-assessment portion of the CEASE Action Sheet on the chart and puts the CEASE Sticker on the problem list
• The clinician quickly reviews the self-assessment portion of the CEASE Action Sheet and turns it over for the clinician portion of the CEASE Action Sheet
• The clinician briefly documents the tobacco control counseling delivered
• The clinician hands the parent an appropriate CEASE “halflet” about tobacco use for the parent's situation.
• The clinician offers to enroll the parent into the proactive state quitline (where available), using the enrollment portion of the CEASE Action Sheet. Where proactive quitlines are not available parent will be referred to quitline without direct fax.
• The clinician hands the enrolled parent a CEASE Welcome halflet, which reinforces the parent's decision to quit and reminds the parent that the proactive quitline will be calling
• For the parent resistant to quitting smoking or enrolling in the quitline, the clinician offers them a CEASE Think About It halflet, which details the contact information of the state quitline. The CEASE Think About It halflet is also suitable to give to a non-smoking parent to take home to the smoking parent as it encourages the smoker to attend the child's next clinic visit to obtain further help with addressing smoking.
• If desired and appropriate, the clinician offers the parent a prescription for NRT or more information about NRT using the CEASE pre-printed NRT pads

* The menu of available intervention materials include (1) a questionnaire that screens parents of pediatric patients for smoking status of the patients' household members; (2) a label that affixes to the child's problem list for documenting parent smoking status and indicating the child's SHS exposure, encouraging continuity of cessation support in cross-coverage situations; (3) a three-item self-assessment of the smoker's readiness to quit, interest in pharmacotherapy, and willingness to enroll in quitline counseling. The parent's own self-assessment helps guide the clinician's approach, thereby reducing the offering of unwanted services and increasing the clinician's confidence that they will not risk harming the therapeutic relationship with the parents of their patients; (4) decision support for clinicians that *prompts* a brief motivational messaging approach and exposure-reduction counseling, thus increasing systematic adherence to guidelines; [58] (5) a HIPAA-compliant form for enrolling the smoker in the telephone quitline (6) pre-printed, practice embossed prescription pads for prescribing over-the-counter NRT when desired by the smoker; (7) posters for exam rooms to activate parents of patients and cue clinicians for tobacco dependence treatment; (8) low literacy written information to support smoking cessation and SHS exposure reduction (9) a simple one-page implementation guide to support integrating the parent, clinician, and practice levels of the intervention. (See www.ceasetobacco.org for most recent version) A more detailed training manual discusses additional topics such as how an office can bill and obtain reimbursement for tobacco control services rendered, and how to establish initial contact with the quitline while the parent is still in the office (in places where faxed enrollment is not yet available). The manual includes research demonstrating high parent satisfaction with addressing parental smoking as part of the child healthcare visit.