



The Clinical Effort against Secondhand Smoke Exposure (CEASE) California: Implementing a Pediatric Clinical Intervention to Reduce Secondhand Smoke Exposure

Jyothi N Marbin*, Cindy Nelson Purdy, Kelly Klaas, Gena L Lewis and Kathleen P Tebb

Department of Pediatrics, University of California San Francisco, USA

*Corresponding author: Jyothi N Marbin, Department of Pediatrics, University of California San Francisco, USA, Tel: 510-428-3885x4408; E-mail: jyothi.marbin@gmail.com

Received date: June 03, 2016; Accepted date: July 19, 2016; Published date: July 27, 2016

Copyright: © 2016, Marbin JN et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution and reproduction in any medium, provided the original author and source are credited.

Abstract

Introduction: The Clinical Effort against Secondhand Smoke Exposure (CEASE) is an evidence based intervention to reduce secondhand smoke exposure (SHSE) in children. The goals of this study were:

1. To improve pediatric providers' perceived knowledge of the consequences of and need for SHSE screening.
2. Increase screening rates of SHSE and the provision of smoking cessation support services for identified smokers including nicotine replacement therapy (NRT) and referrals to the California Smoker's Helpline (Helpline).

Methods: Pediatric clinics in Northern California were trained to implement CEASE. The evaluation had three components:

1. An evaluation of the training and its impact on participants' knowledge and ability to implement CEASE (via anonymous post-training survey).
2. Referrals received by the California Smokers' Helpline (Helpline); and (3) pre-post changes in perceived knowledge, screening practices, and provision of smoking cessation support (nicotine replacement therapy prescriptions and referrals to the Helpline) to family members who were identified as smokers (using a retrospective pre-post design). In addition, clinician champions were interviewed to gather information on barriers and facilitators to the implementation of CEASE 6 months after the training.

Result: A total of 24 practice sites with 315 staff were trained to implement CEASE. Training participants rated the quality of the training high and most either strongly agreed or agreed that the training improved their knowledge and ability to implement CEASE. Referrals to the Helpline increased significantly and there were significant pre-post improvements in the provision of smoking cessation support services but not in rates of screening for SHSE. Barriers and facilitators to implementing CEASE are discussed.

Conclusion: The CEASE California training is a practical and replicable model for pediatric providers to screen patients for SHSE and provide smoking cessation support services. Practice support tools, on-site champions, and coverage for NRT facilitated implementation of CEASE. However, not all patients referred to the Helpline followed up and there was no system for providers to track referrals. In addition, in-person trainings are costly and require significant travel time. Future interventions should leverage electronic health records to facilitate screening for SHSE and to improve referral and follow-up care for smokers. Future studies should examine other training modalities to more cost-effectively disseminate the CEASE training.

Keywords: Tobacco; Secondhand smoke; Provider training

Introduction

Tobacco use continues to be the leading cause of preventable death in the United States [1]. Secondhand smoke exposure (SHSE) causes approximately 42,000 deaths each year among adults and children in the United States. Children are particularly vulnerable to SHSE, which is linked to a number of poor health, behavioral, and educational outcomes [2,3].

Pediatric providers are well positioned to discuss family tobacco use and offer cessation support resources. They are generally a trusted source of health information [4] and have access to many parents, especially the medically underserved, who may lack a primary care provider and/or see their child's doctor more than their own [5,6]. However, only 3.5% of pediatricians report providing smoking cessation assistance to parents. There is a significant missed opportunity to address SHSE in the pediatric setting [7].

The Clinical Effort against Secondhand Smoke Exposure (CEASE) is an evidence-based intervention that aims to improve pediatricians'

ability to assess SHS exposure among their pediatric patients and provide cessation support to household members who smoke. CEASE consists of a three-step approach: ask, assist and connect [8,9]. In this model, pediatric providers are trained to ask each family about SHSE, assist families by providing brief motivational interviewing and offer nicotine replacement therapy (NRT) prescriptions to smokers, and connect the smoker to the state Helpline for additional smoking cessation support. In one randomized controlled trial, clinics trained to implement CEASE had significantly higher rates of quitline enrollment rates, smoking cessation medication provision, and counseling for smoking cessation, than clinics that were not receiving the CEASE intervention [8]. A follow-up study found that these clinics were able to sustain these effects over time after the official study had ended [10]. Although CEASE has been shown to be an effective intervention [8,10] the study included the first 22 practices that responded to the request to participate in the research study and the sample likely included clinics that were more motivated to implement the CEASE intervention. A review of other interventions to address SHS found less promising results [11]. Provider barriers to assisting parents/family members in quitting smoking include limited time, insufficient understanding of smoking cessation medications, lack of knowledge and access to smoking cessation support resources, coverage for nicotine replacement therapy (NRT) and lack of reimbursement for meaningful cessation counseling of the parent. These barriers contribute to the lag in adoption of clinical improvement practices that have been shown to be effective in research studies and the implementation of such promising approaches into wider clinical practice [12,13].

The purpose of this study was to expand the implementation of CEASE into wider-clinical practice and evaluate the effectiveness of the CEASE training on participants' knowledge of SHSE as well the impact of the training on the frequency in which pediatric providers screen patients for SHSE, and the extent to which identified smokers were provided with NRT prescriptions and referrals to California Smokers' Helpline (Helpline). This study also identified barriers and facilitators to successful dissemination and implementation efforts.

Method and Materials

Recruitment of Pediatric Practice Sites: The American Academy of Pediatrics, California Chapter 1 (CCIAAP) invited pediatric sites throughout their network to participate in the CEASE training. As an incentive, providers were offered complementary AAP Maintenance of Certification (MOC) credits for the Quality Improvement Tobacco Control Module for board recertification.

Overview of CEASE Training: The CEASE training team (a pediatrician and nurse practitioner with expertise in smoking cessation) conducted an in person training at each practice site. The original developers of CEASE reviewed and provided input on the training to ensure that it was consistent with the CEASE evidence-based model. The training consisted of a one hour lecture and discussion that reviewed the prevalence and consequences of SHS exposure among children; the rationale for screening in the pediatric setting; strategies to screen pediatric patients for SHSE; brief motivational interviewing with smokers to assess readiness to quit smoking; how to prescribe NRT; and how to connect smokers to the Helpline for smoking cessation support counseling and services. The training also provided clinicians and staff with a variety of support tools to help them implement practice change strategies (e.g. preprinted NRT prescription forms; Helpline referral forms; county

specific NRT prescribing information, postcards with the Helpline's toll free number, and posters encouraging parents to seek help quitting smoking). Each practice site was asked to identify a provider to serve as the CEASE champion to lead clinic-specific quality improvement efforts, gather input from their respective colleagues about change strategies to establish the CEASE work flow, oversee implementation efforts, address questions from clinic staff/providers and disseminate information regarding changes to clinic protocol and referral data captured from the California Smokers' Helpline.

Training Evaluation: To evaluate the effectiveness of the training, participants were asked to complete a brief, anonymous, voluntary survey immediately following the training to assess the quality of the training and performance of the trainers and the effectiveness of the training on improving knowledge and ability to implement CEASE. The survey categories were: (1) Trainer Performance (6 items); (2) Ability to Support Professional Competence (5 items); and (3) Ability to Improve Knowledge and Practice (7 items). The survey also provided participants with an opportunity to provide additional comments.

Clinician Champion Interviews: The clinician champions at each practice site were interviewed, by an independent evaluator approximately six months following the training. These were primarily telephone interviews lasting approximately 30 minutes. Using a retrospective pre-post design, clinic champions were asked to rate their practice site's screening practices, provision of smoking cessation medication and referrals to the California Smoker's Helpline. They were asked to rate their practice behaviors prior to the CEASE training and six months after implementing CEASE using a 4 point Likert scale where 1=never, 2=sometimes, 3= often, and 4= always. Champions were also asked about facilitators and barriers to the implementation of CEASE.

Helpline Referral Data: In addition to the self-report measures (participant surveys and champion interviews), referral data from the Helpline was obtained by study investigators for inclusion in the evaluation analyses. Trainings began in August 2013 and analyses were completed in December 2014. This study received approval from the Institutional Review Board.

Results

CEASE California was disseminated to 24 practice sites and 315 staff were trained. Of these, 188 were providers and 115 were other clinical and support staff (12 did not specify role). The following are the results for each component of the evaluation.

Assessment of the CEASE Training: Participants rated the quality of the CEASE training in six core areas: (1) trainers' knowledge of the topic; (2) organization of the training material; (3) delivery of the content; (4) ability of the trainers' to stimulate interest; (5) responsiveness to the audience; and (6) overall quality of the training. Their ratings were based on a 5-point Likert rating scale (where 5= Excellent; 4=Above Average; 3= Average; 2= Below Average and 1= Poor). The trainings were very well received, with all participants rating the trainers' performance on each category as "Excellent" or "Above Average" (See Table 1). Participants rated the overall quality of the training high with a mean rating of 4.92.

Content Areas	Mean
Knowledge of the topic	4.92 (.30)

Organization of material	4.85 (.45)
Delivery of content	4.85 (.44)
Ability to stimulate interest	4.80 (.49)
Responsive to audience	4.84 (.47)
Overall quality of the training	4.89 (.36)

Table 1: Assessment of Training.

Impact of Training on Knowledge and Ability to Implement CEASE: Participants rated the extent which they agreed/disagreed with a number of statements that assessed the impact of the training on their knowledge and ability to implement the individual components of CEASE. They used a 5pt agreement scale where 5=Strongly agree, 4=Somewhat agree; 3= Neither agree or disagree; 2= Somewhat disagree and 1= Strongly disagree. Almost all training participants reported that the training increased their ability to screen patients for SHS exposure, refer patients to the Helpline, and provide NRT prescriptions (see Table 2 shows the means for each item and the percent of respondents who agreed or strongly agreed with each statement).

This training improved	Mean (SD)	% who Strongly Agreed or Agreed
My knowledge about the consequences of SHS	4.50 (.79)	90.3
My understanding of the prevalence of tobacco use	4.42 (.81)	89.5
How to use CEASE in my practice	4.68 (.59)	96.2
My ability to screen patients for SHS	4.47 (.75)	91.2
My ability to refer patients to smokers' quit line	4.65 (.66)	95.1
My ability to provide caregivers who smoke with a nicotine replacement therapy Rx	4.55 (.82)	92.4

Table 2: Post-training Knowledge and Ability.

Self-reported Changes in Clinical Practice: Table 3 provides the self-reported retrospective pre-post practice changes. Providers were asked to estimate their clinic's screening practices prior to the CEASE training (using the 4-pt Likert scale where 4=Always and 1=Never). The self-reported pre-training average was 3.15 (SD.80) which increased to 3.54 (SD.52) after the training (p=.054). They also reported that the CEASE training resulted improved their rate of providing NRT prescriptions and referrals to the Helpline. Prior to the training, very few reported prescribing NRT 1.23 (SD .44) which increased to 2.54 (SD .66), p<.001 at the six month interview. Self-reported helpline referrals also increased from 2.0 (SD .58) to 2.70 (SD .63), p=.013.

CEASE Training	Pre Training Mean (SD)	Post Training Mean (SD)	p- Value
SHSE Screening	3.15 (.80)	3.54 (.52)	0.54
NRT Prescriptions	1.23 (.44)	2.54 (.66)	< .001

Helpline Referrals	2.00 (.58)	2.70 (.58)	0.13
--------------------	------------	------------	------

Table 3: Clinician Reported Behavior Change Pre/post CEASE Training.

Helpline Referral Data: In addition to self-reported data. Referral data from the Helpline was also analyzed for 14 practice sites. The remaining 10 practices were Kaiser Permanente sites that use their own internal phone referral system and smoking cessation support classes and did not use the state Helpline. Prior to the training, there was no record of Helpline referrals from the practice sites trained to implement CEASE. The first two quarters of post-training data from the 14 sites resulted in a total of 208 referrals to the Helpline. Of those, the Helpline reached 81 (39 %) and 59 (73 %) agreed to services. This represents a significant improvement in actual referrals to the Helpline.

Champion Interviews: Interviews with champions revealed a number of factors that contribute to their ability to implement CEASE as well as barriers to implementing CEASE. Many providers reported that even prior to the CEASE training, they were already knowledgeable about the impact of SHSE in children and most practice sites were already screening their pediatric patients for SHSE. However, many reported that while they were screening for SHSE, they did not have any mechanism to address SHSE prior to CEASE. As a result, there was widespread agreement that the CEASE tools and strategies to support identified smokers made the screening efforts more meaningful because providers could now take steps to offer support to smokers. Some providers were initially concerned that families would react negatively when asked about their smoking behaviors at their child's visit. However, few reported having encountered any resistance to discussing smoking behaviors. Providers reported that the motivational interviewing component of the training was helpful in addressing smokers' readiness to quit; however, interviews revealed that their ability to provide brief behavioral counseling was contingent on the time available during the visit. Thus lack of time and competing priorities for the visit continue to be a barrier to implementing clinical practice interventions such as CEASE. Champions reported that the support tools developed for this intervention - including the pre-printed NRT prescription forms and Helpline referral cards - were critical to implementing CEASE.

There were a number of additional barriers to implementing CEASE. As mentioned previously limited time to provide counseling was the most frequently cited barrier. In addition, many reported that it was difficult to provide direct referrals to the Helpline. Providers and staff were able to provide Helpline referral cards with the toll-free number, but many felt that smokers were not calling the Helpline. While there was no data to confirm this, providers expressed a desire to be able to have a system where they could follow-up with the referrals. In would be more effective for the Helpline to follow-up with referrals. The Helpline accepted both fax and e-mail referrals from the clinic; however, champions reported challenges with providing direct referrals because it required additional steps that was outside of the routine clinical workflow. Providers in counties with a high proportion of Medicaid plans felt that there were barriers to patients obtaining NRT. These included more restrictive NRT coverage with certain county Medicaid plans requiring prior authorization before filling prescriptions, and misunderstanding by physicians and pharmacists that the smokers need a certificate proving they have started counseling in order to have NRT covered by Medicaid. Several providers noted it would be helpful to build tobacco cessation support

tools and e-referrals into the EHR to automate the referral process. Finally, providers reported that they would like to know if smokers received their NRT prescriptions and were able to stop smoking.

Discussion

This study presents findings from the first implementation evaluation of CEASE in California. Evaluation data show that the trainings were well received, and significantly increased NRT prescriptions and referrals to the Helpline. It is likely that improvements in screening rates did not reach statistical significance because of the relatively high screening rates prior to the CEASE intervention. It is important to note that the Helpline referral data underestimates the proportion of identified smokers who received smoking cessation support since providers reported many patients choose NRT but not referral to the Helpline.

Champions noted that the support tools and strategies (e.g. NRT prescription forms and systems to refer to the Helpline) were particularly useful in implementing CEASE as were the involvement and “buy-in” of support staff. Education around insurance coverage of NRT was also valued by trainees. Barriers noted by champions include limited time in a pediatric visit, insurance coverage issues, and fear about parental reactions/resistance to smoking cessation interventions. Providers also commented that many parents do not follow-up with Helpline referrals. To improve compliance with smoking cessation support services, future studies should investigate the effectiveness of various incentives for motivating parents/smokers to follow through with phone counseling services.

Under the Affordable Care act and corresponding expansion of Medicaid in California, more parents are covered by health insurance, and thus eligible for NRT coverage. In addition, many private health plans also provide coverage for NRT. Therefore concerns over insurance coverage have been diminishing over time as more smokers have health insurance that includes NRT as part of the health benefit package. This study focused on training providers and clinic staff; however it is apparent that pharmacists who fill NRT prescriptions also need education about state level NRT policies and coverage. In California, counseling certificates are not required for Medicaid coverage of NRT, though other states may vary in access and coverage.

There are a number of limitations to this study. First, participation in the CEASE training was voluntary. Thus participants had a high interest in implementing CEASE and as such, findings may not be generalizable to practice sites that may be less motivated. Second, it was not possible to interview clinic champions prior to the CEASE training, which would have minimized reporter bias. Third, due to limited resources, we were not able to validate provider self-report data with medical records or track the number of individuals who successfully quit smoking.

Despite these limitations, this study provides information that can improve further implementation and dissemination efforts of CEASE. The factors found to improve dissemination and uptake of quality improvement interventions in this study may reduce the time lag between the availability of evidence-based practice change strategies and their adoption into wider clinical practice [13,14]. Some of the lessons learned from this study may also be of interest to other clinical practice improvement efforts.

Conclusion

Future research should identify the proportion of smokers identified through routine screening and the impact of smoking cessation support on cessation rates. More research needs to be done utilizing electronic health record (EHR) to support implementation of CEASE and to support clinicians' ability follow-up with identified smokers. Other studies have shown that EHR integration can increase referral rates to Quitlines [15-17], suggesting that integrating tobacco treatment into EHRs is a high yield area for intervention. In addition, this study did not incorporate patient perspectives on screening and smoking support strategies, more research is needed to incorporate diverse patient perspectives further inform effective smoking cessation support interventions to improve interventions and address health disparities. The cost of delivering the CEASE training in person is relatively high, and as CEASE expands, there is an opportunity explore the cost effectiveness of an online version of this training. Thus, online trainings, EHR integration, and ongoing technical assistance to sites will need to be further investigated and integrated to facilitate future dissemination and implementation efforts.

Acknowledgments: The authors would like to thank each of the participating clinic site CEASE champions and staff for making this study possible. We are also grateful for consultation provided by the original developer of CEASE, Jonathan Winickoff MD, MPH and the members of the California CEASE Advisory Board. We also appreciate the contributions of Cathy McDonald, MD, MPH and Jeremy Drehmer, MPH in the development of this program. We are grateful to Christopher Anderson and the California Smokers' Helpline for sharing their data with us and Beverly Busher, Executive Director of the AAP California Chapter 1 for her support with this project. We would like to thank Yana Reznik, PA for leading the interview team in conducting the champion interviews. This research was made possible by a grant from Pfizer Independent Grants for Learning & Change, the UCSF Smoking Cessation Leadership Center, and the American Academy of Pediatrics, California Chapter 1. No financial disclosures were reported by the authors of this paper.

References

1. U.S. Department of Health and Human Services (2014) The Health Consequences of Smoking—50 Years of Progress. A Report of the Surgeon General. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health.
2. Mannino DM, Moonman JE, Kingsley B, et al. (2001) Health effects related to environmental tobacco smoke exposure in children in the United States: data From the Third National Health and Nutrition Examination Survey. *Arch Pediatr Adolesc Med* 155: 36-41.
3. Yolton K, Dietrich K, Auinger P, et al. (2005) Exposure to environmental tobacco smoke and cognitive abilities among U.S. children and adolescents. *Environ Health Perspect* 113: 93-103.
4. Glanz JM, Wagner NM, Narwaney KJ, et al. (2013) A mixed methods study of parental vaccine decision making and parent provider trust. *Acad Pediatr* 12: 481-488.
5. Heberlein M, Huntress M, Kenney G, et al. (2012) Medicaid coverage for parents under the Affordable Care Act. Center for Children and Families. Georgetown University, Health Policy Institute.
6. Winickoff JP, Buckley VJ, Palfrey JS, et al. (2003) Intervention with parental smokers in an outpatient pediatric clinic using counseling and nicotine replacement. *Pediatrics* 112: 1127-1133.

7. Winickoff JP, Healey EA, Regan S, et al. (2013) Implementation of a parental tobacco control intervention in pediatric practice. *Pediatrics* 132: 109-117.
8. Winickoff JP, Nabi-Burza E, Chang Y et al. (2013) Implementation of a parental tobacco control intervention in pediatric practice. *Pediatrics* 132:109.
9. Winickoff JP, Berkowitz AB, Brooks K, et al. (2008) Clinical effort against secondhand smoke exposure (CEASE): development of framework and intervention. *Pediatrics* 122.
10. Winickoff JP, Nabi-Burza E, Chang Y et al. (2014) Sustainability of a parental tobacco control intervention in pediatric practice 134: 933-941. doi:10.1542/peds.2014-0639.Epub 2014 Oct 20.
11. Daly JB, Mackenzie LJ, Freund M et al. (2016) Interventions by Health Care Professionals Who Provide Routine Child Health Care to Reduce Tobacco Smoke Exposure in Children A Review and Meta-analysis. *JAMA Pediatr* 170: 138-147.
12. Lang ES, Wyer PC, Haynes RB (2007) Knowledge translation: closing the evidence-to-practice gap. *Ann Emerg Med* 49: 355-363.
13. Green LW, Ottoson JM, Garcia C, Hiatt RA (2009) Diffusion theory and knowledge dissemination, utilization, and integration in public health. *Annual Rev Public Health*. 30: 151-174. doi: 10.1146/annurev.publhealth.031308.100049.
14. Langley GL, Moen R, Nolan KM, et al. (2009) *The Improvement Guide: A Practical Approach to Enhancing Organizational Performance* 2nd edition. San Francisco: Jossey-Bass Publishers.
15. Adsit RT, Fox BM, Tsiolis T, Ogland C, Simerson M, et al. (2014) Using the electronic health record to connect primary care patients to evidence-based telephonic tobacco quitline services: a closed-loop demonstration project. *Transl Behav Med* 4:324-32.
16. Sharifi M, Adams WG, Winickoff JP, Guo J, Reid M, et al. (2014) Enhancing the electronic health record to increase counseling and quitline referral for parents who smoke. *Acad Pediatr* 14: 478-484.
17. Vidrine JI, Shete S, Li Y, Cao Y, Alford MH, et al. (2013) The Ask-Advise-Connect approach for smokers in a safety net healthcare system: a group-randomized trial. *Am J Prev Med* 45: 737-741.