Enhancing the Electronic Health Record to Increase Counseling and Quit-Line Referral for Parents Who Smoke

Mona Sharifi, MD, MPH; William G. Adams, MD; Jonathan P. Winickoff, MD, MPH; Jing Guo, PhD; Margaret Reid, RN, BA; Renée Boynton-Jarrett, MD, ScD

From the Division of General Academic Pediatrics/Center for Child and Adolescent Health Research and Policy, Massachusetts General Hospital for Children, Harvard Medical School, Boston, Mass (Drs Sharifi and Winickoff); Division of General Pediatrics, Boston University School of Medicine, Boston, Mass (Drs Adams, Guo, and Boynton-Jarrett); and Boston Public Health Commission, Boston, Mass (Ms Reid)
The authors declare that they have no conflict of interest.
Address correspondence to Mona Sharifi, MD, MPH, Division of General Academic Pediatrics, Department of Pediatrics, Massachusetts General Hospital for Children, 100 Cambridge Street, 15th Floor, Suite 1523, Boston, MA 02114 (e-mail: msharifi@partners.org).
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ABSTRACT

OBJECTIVE: To assess the impact of an electronic health record (EHR) modification and brief clinician training on tobacco smoke exposure (TSE) management in pediatric primary care.

METHODS: Within a teaching hospital-based, urban primary care setting, we modified the EHR to include TSE screening prompts, decision support, educational literature, and simplified referral to the state quit line (QuitWorks). A brief training was conducted for the 48 clinic physicians (34 residents and 14 attendings). We collected cross-sectional, independent, random samples of EHR data from well-child visits for children ≤12 years old seen 3 months before (2024 visits) and 3 months after (1895 visits) the intervention and pooled client data from QuitWorks to evaluate TSE screening, counseling, and quit-line referrals. A needs assessment questionnaire examined preintervention attitudes and practice around TSE management; follow-up questionnaires explored satisfaction and subjective changes in skills.

RESULTS: The baseline needs assessment revealed that although most clinicians agreed that it is appropriate for pediatricians to conduct TSE screening, counseling, and referral during well-child visits, only about half screened, 42% counseled, and 28% routinely offered to refer smoking parents. In pre–post analyses of 117 and 112 EHR-documented positive screens, the intervention was associated with a 16-fold greater likelihood of counseling among positive screens (adjusted odds ratio 16.12; 95% confidence interval 7.28, 35.68). Referrals to QuitWorks increased from 1 before to 31 after the intervention.

CONCLUSIONS: Implementation of EHR modifications and a brief training to support TSE management was associated with higher rates of counseling and quit-line referrals for parents who smoke.

KEYWORDS: clinical decision support systems; electronic health record; guideline adherence; quit line; tobacco smoke pollution; tobacco use cessation

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WHAT'S NEW

Higher rates of tobacco smoke exposure (TSE) counseling and quit-line referral for parents who smoke can be achieved by combining a relatively simple electronic health record modification and brief clinician training to support TSE management in pediatric primary care.

THE DETRIMENTAL SHORT- and long-term health consequences of tobacco smoke exposure (TSE) are well established among both adult and pediatric populations.[1–4] Disparities in TSE are documented, and low-income children have a 7 to 10 times higher likelihood of exposure than children from higher socioeconomic backgrounds.[5] Children who live with a smoker are more likely to begin smoking themselves, while parental quitting is associated with lower teen smoking rates.[6–8]

The pediatric primary care clinic is an opportune site for promotion of smoking cessation. Many adults see their child's pediatrician far more frequently than their own physician, particularly within the first 2 years of their child's life. Over a quarter of young adults are uninsured, and thus their child's pediatrician may be the only health provider with whom they interact.[9] Therefore, pediatric providers have regular and unique opportunities to advocate for child health via smoking cessation.[10–12] TSE screening has been endorsed as an important part of pediatric routine health maintenance by both the National Heart, Lung, and Blood Institute and the American Academy of Pediatrics.[13]

A recent meta-analysis found that interventions seeking to promote parental cessation to benefit children were associated with higher parental quit rates.[8] Specific guidelines, such as the 5As (ask, advise, assess, assist, and arrange follow-up) or AAR (ask, assist, refer), are available to facilitate cessation interventions.[14,15] Nonetheless, many providers neither screen for TSE nor offer appropriate counseling and follow-up for parents who smoke. A 2004 national survey revealed that only 9% of smoking parents who had seen their child's doctor within the preceding year had any form of smoking cessation counseling recommended and less than 1% had enrolled in cessation services.[16] Although 80% of Ohio pediatricians reported asking about smoking status, most lacked confidence in their abilities to complete the 5As despite believing that completion would result in fewer parents smoking.[17] A California study found that family practitioners were more likely to counsel and refer smoking parents, while pediatricians were more likely to report lacking smoking cessation counseling skills and perceptions that parents would ignore their advice.[18]

Office-based systems to support guideline implementation like recall/reminder systems, risk assessment forms, preventative service prompts, and patient education materials have been successful.[19–21] The electronic health record (EHR) offers tremendous potential to address many of the modifiable barriers to TSE counseling and referral through decision support, especially in light of increasing national EHR uptake and emphasis on meaningful use. Furthermore, connecting smokers with telephone quit lines for evidence-based counseling may improve the efficiency of clinic-based cessation efforts by allowing providers to take on a more defined and limited role in delivering brief advice/counseling and referral.[22] Quit lines, despite demonstrated effectiveness and broad availability, are underuntilized, reaching only 1% of US smokers in 2006.[23] A national survey found that a majority of smoking parents would enroll in a telephone-based cessation program if offered by their child's physician.[16]

State-of-the-art, systems-level approaches are needed that effectively address known barriers to TSE management in clinical settings given the potential for public health impact. One prior study has demonstrated feasibility and results suggesting cost-effectiveness of an EHR facilitating cessation counseling and quit-line referral in adult primary care.[22] To our knowledge, no prior studies have evaluated the influence of EHR changes on TSE counseling and quit-line referral in the pediatric primary care setting. In this study, we hypothesized that a modification to the EHR paired with a brief 15-minute training for clinicians could increase counseling and quit-line referral among parents who smoke in an urban pediatric primary care clinic serving a population that is disproportionately affected by the hazards of TSE: young children and mothers of reproductive age.

PATIENTS AND METHODS

SETTING AND SUBJECTS

We conducted a study among all 48 pediatric clinicians (34 residents and 14 attendings) at Boston Medical Center's Pediatric Primary Care Center, a teaching hospital-based, urban primary care clinic serving a predominantly low-income and minority population with over 24,000 patient visits annually. Boston Medical Center is an academic medical center that serves the largest population of Medicaid patients in Massachusetts. This site has used a completely electronic medical record since 2000 (Centricity GE). The EHR includes a template for pediatric well-child visits that includes preventive health screening prompts and questions.

STUDY DESIGN

We conducted a pre–post study of provider behavior change after an intervention consisting of EHR modifications and brief clinician training to facilitate TSE management. Changes were made to the existing EHR system (Fig. 1) including: 1) the expansion of an existing TSE screening prompt ("Cigarette smokers at home?") with the addition of a follow-up question ("Interested in quitting?") for positive screens to assess interest and expected timeline for quitting; 2) decision support guiding management of positive screens; and (3) simplified printing of educational literature and a fax referral form to a free telephone smoking cessation program (QuitWorks), funded through the Massachusetts Department of Public Health. Depending on the clinicians' entries for the screening questions, the decision support element included the appearance of an alert reminding clinicians to "Click Smoking" to print an educational handout for all with household smokers or to "Click Smoking and QuitWorks" to print the handout and a QuitWorks fax referral for parents interested in quitting within 30 days, per recommendations from QuitWorks staff. The 1-page educational handout included information on the hazards of second hand smoke, advice to maintain a smoke-free home and car, and resources for smoking cessation. All clinicians completed a brief 15-minute training session in small groups led by a physician (MS). The training briefly reviewed the public health significance of TSE, the unique and important role of the pediatric primary care setting in TSE screening and management, EHR modifications, and recommendations for TSE management, with an emphasis on brief counseling and referral depending on readiness to quit.

Clinicians were asked to complete a baseline needs assessment questionnaire before the training sessions to assess attitudes and practice around TSE management during well-child visits and a follow-up questionnaire 3 months after the intervention to obtain feedback regarding the EHR modification and training as well as perceived changes in skills and practice. Both baseline and follow-up questionnaires were anonymous and consisted of 22 and 27 closed-ended questions, respectively, as well as opportunities for free text.