Published in final edited form as:

Am J Prev Med. 2013 December ; 45(6): . doi:10.1016/j.amepre.2013.07.007.

Triple Tobacco Screen Opportunity to Help Families Become Smokefree

Emara Nabi-Burza, MBBS, MS, Jonathan P. Winickoff, MD, MPH, Stacia Finch, MA, and Susan Regan, PhD

Center for Child and Adolescent Health Research and Policy (Nabi-Burza, Winickoff), Massachusetts General Hospital for Children (MGHfC), the Department of General Medicine (Regan), Massachusetts General Hospital, Boston, Massachusetts; the AAP Richmond Center of Excellence (Winickoff), the Pediatric Research in Office Settings (Finch), American Academy of Pediatrics, Elk Grove Village, Illinois

Abstract

Background—American Academy of Pediatrics policy recommends that pediatricians document environmental tobacco smoke (ETS) exposure of a child at every visit. The extent to which pediatricians adhere to this policy, however, is unknown.

Purpose—The goal of the study was to examine the extent to which pediatricians screen parents for tobacco use and home- and car-related smoking rules. Further, the potential association between factors associated with pediatrician inquiry into parental tobacco use and rules is examined.

Methods—Post-visit exit interviews were conducted in ten pediatric practices between June 2009 and March 2011 with parents whose children had been seen by a healthcare provider. Parents were considered to have been given the “triple tobacco screen” if they reported being asked by a pediatric healthcare provider about their smoking behavior, smokefree home rules, and smokefree car rules. Bivariate analysis and multivariable logistic regression was done to explore factors associated with parents being given any component of the triple tobacco screening. Data were analyzed between March 2012 and February 2013.

Results—Of 9145 parents interviewed, 20% of the parents reported being asked at least one question from the triple tobacco screen, and only 9% reported being asked all three questions. Overall, 17% of parents reported being asked about their smoking status, 16% about smokefree home rules, and 11% about smokefree car rules. Few smoking parents (23%) and fewer nonsmoking parents (19%) were screened about their tobacco use and behavior.

Conclusions—Pediatricians infrequently addressed ETS exposure of children among parents who do and do not smoke. Substantial missed opportunities may exist to counsel smokers and reduce ETS exposure of children in the most common exposure locations—the home and car.

© 2013 American Journal of Preventive Medicine. Published by Elsevier Inc. All rights reserved.

Address correspondence to: Emara Nabi-Burza, MBBS, MS, Center for Child and Adolescent Health Research and Policy, 15th Floor, C-100, Massachusetts General Hospital, 100 Cambridge St., Boston MA 02114. emaranburza@gmail.com.

Publisher's Disclaimer: This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final citable form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Background

Adverse health effects of childhood environmental tobacco smoke (ETS) exposure include upper respiratory infections,^{1–4} sudden infant death syndrome,^{5,6} and severity of asthma symptoms.⁷ Pediatric office visits provide teachable moments for pediatricians to encourage parents to quit smoking and provide their children with a smokefree environment.^{8,9} An American Academy of Pediatrics (AAP) policy recommends that pediatricians place high priority on tobacco control goals to improve children's health, which includes addressing smoking with families, assisting families in becoming tobacco free, and adopting smokefree home and car policies.¹⁰ This paper examines the extent to which pediatricians screen parents for their smoking status, and for smokefree home and car rules, using survey data collected from parents exiting their child's pediatrician's office. Further, the potential association between factors associated with pediatrician inquiry into parental tobacco use and home and car smoking rules is also examined.

Methods

Data collected at ten pediatric research in office settings¹¹ pediatric practices located in eight states (Alaska, Connecticut, Missouri, New Mexico, Pennsylvania, South Carolina, Tennessee, Virginia) were analyzed. Practices enrolled in the study at different time points and data were collected between June 2009 and March 2011. The study protocol was approved by the IRBs of AAP and Massachusetts General Hospital, and individual practice IRBs as required. Data were analyzed between March 2012 and February 2013.

At each practice, post-exit interviews were conducted with parents at the end of their child's visit. Parents were eligible to enroll in the study if they reported being a smoker. All parents exiting the practice were screened until approximately 100 parents were enrolled from that practice. To determine if the "triple tobacco screen" was administered during their visit, parents were asked: "At any time in your visit today did anyone ask if you": (1) smoke cigarettes; (2) have a smokefree home; (3) have a smokefree car.

Data Analysis

Rates of asking "triple tobacco screen" components were examined. Chi-squared tests were used to assess bivariate associations between screening by the pediatrician and parent, child and visit characteristics. Variables that were significant in the bivariate analysis were included in a multivariate model while adjusting for parental age, gender, education, and race. Single imputation was employed to retain cases missing values for any predictors in the model. A generalized linear mixed model was used that adjusted for clustering within practice using GLLMM.¹² Adjusted risk ratios (ARRs) and 95% CIs were calculated for each variable from the final model. All *p*-values are two-sided and were considered significant at <0.05. All analyses were conducted using Stata statistical software, version 10.

Results

Of 9145 parents screened, 81% were women; 64% attended some college, and 59% were white (Table 1). Overall, 20% of parents reported being asked at least one question from the triple tobacco screen; 9% were asked all three questions; 17% were asked about self-smoking; 16% were asked about smokefree home rules; and 11% about smokefree car rules. Among parents screened for tobacco use, the most common pattern was to be asked about all three sources (45%); followed by parental smoking plus home ETS (21%); and parental smoking only (19%).

In both bivariate (Table 1) and multivariable analyses, having a child aged <1 year (ARR=1.43; 95% CI=1.29, 1.58); bringing in the child for a well visit (ARR=2.53; 95% CI=2.29, 2.81); and being a smoker (ARR=1.19; 95% CI=1.06, 1.35) were associated with greater likelihood of being asked any component of the triple tobacco screen. Parents aged >30 years (ARR=0.87; 95% CI=0.78, 0.97) and white parents (ARR=0.89; 95% CI=0.79, 1.00) were less likely to be asked any component of the triple tobacco screen.

Discussion

Few parents (approximately one in six) were screened for their smoking status, and fewer were screened for smokefree home and car rules. Screening for parental tobacco use is important because pediatricians can only offer assistance when they know a health issue exists. Parents of infants were more likely to be screened for ETS exposure than were those of older children.

A possible explanation for pediatrician focus on infants is that infants are likely to spend the most time in close proximity to their parents and hence are considered to be at higher risk from ETS. According to the 2006 Surgeon General's report, almost 60% of U.S. children aged 3–11 years are exposed to tobacco smoke.¹³ Parent age and race were also found to influence whether pediatricians screen parents for tobacco use. These findings reinforce the importance of screening all parents for tobacco use irrespective of their child's age, and their own age and race, in order to avoid missing opportunities to identify children exposed to tobacco smoke.

Pediatricians had greater than twofold higher rates of tobacco screening during well-child visits. There maybe more time available to discuss tobacco use at well-child visits. However, extending intervention to sick visits would be a good strategy, as parents may be more receptive to any advice that will help eliminate a risk factor of their child's disease.¹⁴

Most parents who smoke (77%) are not screened for tobacco use. One reason that questions about smoking may not have been raised at a particular visit is that they had been raised at a previous visit, yet there remain substantial missed opportunities to counsel smokers and reduce ETS exposure of children in their most common exposure locations. Even when exposure was addressed, all three exposure sources were addressed less than half the time, even though studies have shown that many people with smokefree homes do not have smokefree cars, suggesting that parents may not recognize ETS in cars as an important exposure source for their children.^{15–17}

In light of the AAP guidelines recommending that ETS exposure be addressed and documented at every clinical encounter, it is concerning that only 20% of parents reported any discussion of such exposure at the visit. It has been shown that repeated tobacco cessation counseling is one of the three most important and cost-effective preventive services that can be provided in a medical office.¹⁸ Because pediatricians are in a unique position to address children's exposure, they should ensure that their offices facilitate delivery of evidence-based tobacco treatment for all smoking parents. Although most pediatricians do not have time to spend the majority of a clinical encounter on the parent's smoking, brief interventions are effective, and complementary strategies such as referring parents to the state's quitline will maximize the chances of parental smoking cessation.^{8,9,19,20} It is beyond the scope of this paper to discuss ways of optimizing triple tobacco screen in pediatric practices,^{20,21,22} but online courses are available to help pediatric offices effectively implement tobacco control strategies in their daily delivery of care by using existing available resources.²³

A limitation of the study is that the results are based on parental self-report and thus, subject to recall and response bias. However, the administration of the survey in-person and immediately after the visit, and the use of a large sample size across eight states, allows greater confidence in the accuracy of the results.

Substantial missed opportunities may exist to counsel smoking parents and reduce ETS exposure of children. Pediatricians could help protect children from this toxic exposure if they knew which children were exposed to tobacco smoke. This study highlights the need for systematic screening of parents for tobacco use so that available systems of care can then be deployed to help them with smoking cessation and establishing smokefree homes and cars.

Acknowledgments

This study was supported by the NIH NCI grant R01-CA127127 (to JPW), the National Institute on Drug Abuse, and the Agency for Healthcare Research and Quality. This study was also partially supported by a grant from the Flight Attendant Medical Research Institute to the AAP Julius B. Richmond Center, and the Pediatric Research in Office Settings (PROS) Network, which receives core funding from the Health Resources and Services Administration (HRSA) Maternal and Child Health Bureau (HRSA 5-UA6-10-001) and the AAP. The funders had no role in the design or conduct of the study; collection, management, analysis and interpretation of the data; or preparation, review and approval of the paper.

The authors especially appreciate the efforts of the PROS practices and practitioners. The pediatric practices or individual practitioners who enrolled participants in the larger study are listed here by AAP Chapter: Alaska: Anchorage Pediatric Group, LLC (Anchorage); Connecticut: Hospital of Saint Raphaels (New Haven); Illinois: Community Health Improvement Center (Decatur); Maryland: Cambridge Pediatrics LLC (Waldorf); Massachusetts: Quabbins Pediatrics (Ware), RiverBend Medical Group - Springfield Office (Springfield); Missouri: Priority Care Pediatrics LLC (Kansas City); New Mexico: Las Vegas Clinic for Children and Youth; PA (Las Vegas); Ohio: Bryan Medical Group (Bryan), The Cleveland Clinic Wooster (Wooster); Oklahoma: Shawnee Medical Center Clinic (Shawnee); Oregon: Siskiyou Pediatric Clinic LLP (Grants Pass); Pennsylvania: Pennridge Pediatric Associates (Sellersville); South Carolina: Inlet Pediatrics (Murrells Inlet); South Dakota: Avera McGreevy Clinic (Sioux Falls); Tennessee: Raleigh Group PC (Memphis); Virginia: Pediatrics of Kempsville PC (Virginia Beach), Riverside Pediatric Center (Newport News), The Clinic (Richlands); West Virginia: Shenandoah Community Health Center (Martinsburg).

No financial disclosures were reported by the authors of this paper.

References

1. Gurkan F, Kiral A, Dagli E, Karakoc F. The effect of passive smoking on the development of respiratory syncytial virus bronchiolitis. *Eur J Epidemiol.* 2000; 16(5):465–8. [PubMed: 10997834]
2. Strachan DP, Cook DG. Health effects of passive smoking. 1. Parental smoking and lower respiratory illness in infancy and early childhood. *Thorax.* 1997; 52(10):905–14. [PubMed: 9404380]
3. Jedrychowski W, Flak E. Maternal smoking during pregnancy and postnatal exposure to environmental tobacco smoke as predisposition factors to acute respiratory infections. *Environ Health Perspect.* 1997; 105(3):302–6. [PubMed: 9171991]
4. Adair-Bischoff CE, Sauve RS. Environmental tobacco smoke and middle ear disease in preschool-age children. *Arch Pediatr Adolesc Med.* 1998; 152(2):127–33. [PubMed: 9491037]
5. Klonoff-Cohen HS, Edelstein SL, Lefkowitz ES, et al. The effect of passive smoking and tobacco exposure through breast milk on sudden infant death syndrome. *JAMA.* 1995; 273(10):795–8.
6. Mitchell EA, Ford RP, Stewart AW, et al. Smoking and the sudden infant death syndrome. *Pediatrics.* 1993; 91(5):893–6. [PubMed: 8474808]
7. Mannino DM, Homa DM, Redd SC. Involuntary smoking and asthma severity in children: data from the Third National Health and Nutrition Examination Survey. *Chest.* 2002; 122(2):409–15. [PubMed: 12171810]

8. Rosen LJ, Noach MB, Winickoff JP, Hovell MF. Parental smoking cessation to protect young children: a systematic review and meta-analysis. *Pediatrics*. 2012; 129(1):141–52. [PubMed: 22201152]
9. Winickoff JP, Berkowitz AB, Brooks K, et al. State-of-the-art interventions for office-based parental tobacco control. *Pediatrics*. 2005; 115(3):750–60. [PubMed: 15741382]
10. American Academy of Pediatrics. Policy statement – Tobacco use: a pediatric disease. Vol. 124. Committee on Environmental Health; Committee on Substance Abuse; Committee on Adolescence; Committee on Native American Child Pediatrics; 2009. p. 1474–87.
11. Slora EJ, Wasserman RC. PROS: a research network to enhance practice and improve child health. *Pediatr Ann*. 2010; 39(6):352–61. [PubMed: 20669890]
12. Rabe-Hesketh S, Skrondal A, Pickles A. Maximum likelihood estimation of limited and discrete dependent variable models with nested random effects. *J Econometrics*. 2005; 128(2):301–23.
13. DHHS. Excerpts from The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Atlanta GA: DHHS, CDC, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2006. Children and Secondhand Smoke Exposure.
14. Winickoff JP, Hillis VJ, Palfrey JS, Perrin JM, Rigotti NA. A smoking cessation intervention for parents of children who are hospitalized for respiratory illness: the stop tobacco outreach program. *Pediatrics*. 2003; 111(1):140–5. [PubMed: 12509567]
15. Nabi-Burza E, Regan S, Drehmer J, et al. Parents smoking in their cars with children present. *Pediatrics*. 2012; 130(6):e1471–8. [PubMed: 23147972]
16. Kegler MC, Malcoe LH. Smoking restrictions in the home and car among rural Native American and white families with young children. *Prev Med*. 2002; 35(4):334–42. [PubMed: 12453710]
17. Norman GJ, Ribisl KM, Howard-Pitney B, Howard KA. Smoking bans in the home and car: Do those who really need them have them? *Prev Med*. 1999; 29(6 Pt 1):581–9. [PubMed: 10600441]
18. Solberg LI, Maciosek MV, Edwards NM, Khanchandani HS, Goodman MJ. Repeated tobacco-use screening and intervention in clinical practice: health impact and cost effectiveness. *Am J Prev Med*. 2006; 31(1):62–71. [PubMed: 16777544]
19. Hall N, Hipple B, Friebely J, Ossip DJ, Winickoff JP. Addressing family smoking in child health care settings. *J Clin Outcomes Manag*. 2009; 16(8):367–73. [PubMed: 20448841]
20. Dempsey J, Friebely J, Hall H, Hipple B, Nabi E, Winickoff JP. Parental tobacco control in the child healthcare setting. *Current Pediatric Rev*. 2011;7.
21. Bunik M, Cavanaugh KL, Herrick D, et al. The ONE Step Initiative: quality improvement in a pediatric clinic for secondhand smoke reduction. *Pediatrics*. 2013; 132(2):e502–e511. [PubMed: 23858424]
22. Winickoff JP, Hipple B, Drehmer J, et al. The clinical effort against secondhand smoke exposure (CEASE): a decade of lessons learned. *J Clin Outcomes Manag*. 2012; 19(9):414–419.
23. EQIPP: Eliminate Tobacco Use and Exposure. eqipp.aap.org/home/home

Table 1

Factors associated with being screened for environmental tobacco smoke exposure (N=9145)

Characteristic	n (%)	Asked about any exposure, n=1802 (20%); n (%)	Not asked about any exposure, n=7343 (80%); n (%)	p-value
Age, years				<0.001*
30	3409 (37)	876 (26)	2533 (74)	
>30	5697 (62)	922 (16)	4775 (84)	
Gender				0.625
Male	1709 (19)	344 (20)	1365 (80)	
Female	7436 (81)	1458 (20)	5978 (80)	
Race and Ethnicity				<0.001*
Hispanic (any race)	1457 (16)	314 (22)	1143 (78)	
White, non-Hispanic	5369 (59)	776 (14)	4593 (86)	
Black or African-American, non-Hispanic	1700 (19)	579 (34)	1121 (66)	
Other	523 (6)	117 (22)	406 (78)	
Education				<0.001*
<High school	517 (6)	131 (25)	386 (75)	
High school graduate	2716 (30)	614 (23)	2102 (77)	
Some college	2674 (29)	554 (21)	2120 (79)	
College graduate	3224 (35)	499 (15)	2725 (85)	
Smoking status				
Smoker	1542 (17)	352 (23)	1190 (77)	0.001*
Nonsmoker	7597 (83)	1450 (19)	6147 (81)	
Youngest child's age, years				<0.001*
<1	2389 (26)	716 (30)	1673 (70)	
1–4	3177 (35)	569 (18)	2608 (82)	
5–9	1872 (20)	289 (15)	1583 (85)	
10	1632 (18)	212 (13)	1420 (87)	
Child's insurance coverage				<0.001*
Medicaid	3467 (38)	839 (24)	2628 (76)	
Private insurance	4773 (52)	722 (15)	4051 (85)	
Other/self-pay	849 (9)	227 (27)	622 (73)	
Reason for visit				<0.001*
Well-child	3802 (42)	1196 (31)	2606 (69)	
Sick child	5343 (58)	606 (11)	4737 (89)	

Note: Boldface indicates significance.

*
p<0.05