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Pediatric otolaryngologists' actions regarding secondhand smoke exposure: Pilot data suggest an opportunity to enhance tobacco intervention

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Abstract

Objective—To assess pediatric otolaryngologists' training, actions, and attitudes with respect to patients exposed to secondhand smoke.

Study Design—Cross-sectional survey.

Subjects—Pediatric otolaryngologists and senior residents.

Methods—An anonymous, Web-based survey of pediatric oloaryngologists was designed to capture demographics, tobacco-specific education, actions, and attitudes. Responses were analyzed descriptively and entered into logistic regression models to determine predictors of adherence to the basic tenets of the general pediatrics secondhand smoke exposure–prevention guidelines.

Results—One hundred-fifteen US physicians completed the survey. Descriptive analysis revealed low levels of training and low levels of tobacco-specific intervention among respondents. Logistic regression models showed that greater tobacco-specific knowledge/education and fewer perceived barriers predicted greater adherence to the basic tenets of the pediatrics guidelines.

Conclusion—Our pilot study provides preliminary evidence that can guide specific improvements in tobacco-intervention training for pediatric otolaryngologists and residents.

Children's exposure to secondhand smoke (SHS) remains a significant public health problem in the United States despite an abundance of information about its health consequences. The US Surgeon General reports 60 percent of children 3 to 11 years old are being exposed,¹ and Healthy People 2010 guidelines call for the reduction of the proportion of children under 6 years being regularly exposed to SHS.² Because SHS has causal links to many pediatric illnesses and chronic diseases and contributes to problems with academic performance,^{3–7} a growing literature emphasizes not only the dangers associated with SHS exposure but also

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the need to improve physician intervention with smoking parents across pediatric clinical settings. Moreover, pediatric treatment guidelines have been established to promote smoke-free environments for children (Table 1).⁸

To date, general pediatricians have generated most of the efforts to promote SHS reduction in pediatric health care settings, creating an opportunity for key pediatric subspecialists to reinforce this primary prevention message, an opportunity that appears unrealized in otolaryngology. Indeed, general pediatricians remain at the front lines of prevention with regard to acute tobacco-related health consequences (eg, respiratory infections, acute asthma presentations, and so on). However, several disease processes commonly seen by otolaryngologists specializing in pediatrics have also been associated with exposure to SHS. A systematic review of the literature found a significant association between SHS exposure and recurrent acute otitis media and otitis media with effusion.³ Other relevant literature showed a causal link between SHS exposure and greater pathological indices of damage to adenoid tissues.⁴ SHS exposure has also been shown to have clear links with childhood cancers and the development of other cancers in adulthood, although a causal relationship between SHS and head and neck cancer has not been established.⁵ In addition to SHS–chronic disease associations relevant to otolaryngology, SHS exposure has been shown to increase acute health problems, including the increased risk of airway complications during outpatient pediatric procedures, with intraoperative laryngospasm and airway obstruction 4.9 and 2.8 times more likely, respectively.⁶

Even though a growing body of evidence has implicated SHS exposure in the pathogenesis of the previously mentioned otolaryngologic disease processes affecting children, adherence to the main tenets of the pediatrics SHS guidelines has not been emphasized in this specialty's literature. Few articles point to the need for SHS assessment and intervention by pediatric otolaryngologists with the exception of Rosenfeld and Sandhu.⁹ Among their sample of 300 parents surveyed in the waiting room of a pediatric otolaryngology practice, 25% had at least one smoker living in their home, and 91% of the families offered one or more counseling opportunities even though most were seen regularly by a pediatrician. The authors stressed that otolaryngologists caring for children should reinforce the prevention foundation laid by the child's pediatrician.

Given the apparent lack of attention to reduce children's SHS exposure despite its known dangers and relevance to otolaryngology practice, we decided to investigate pediatric otolaryngologists' knowledge and training with respect to SHS exposure and their adherence to the basic tenets of the general pediatrics SHS exposure-prevention guidelines (specifically the “5 A's” of tobacco intervention).⁸ To guide future efforts at addressing gaps in SHS knowledge and intervention, we also evaluated known barriers to tobacco intervention (eg, time constraints) as well as hypothesized barriers based on physicians' reported attitudes about tobacco intervention and previous information from general pediatricians.¹⁰

Methods

Data Collection

A cross-sectional survey instrument was designed based on a similar instrument created by using rational and empirical instrument construction methods to assess general pediatrician practices with suspected cases of SHS exposure at a pediatric tertiary care hospital.¹⁰ Invitations to the anonymous, Web-based survey were sent via e-mail to otolaryngology residents and pediatric otolaryngologists within the United States. Four domains of data were collected in the survey, including demographics, tobacco-intervention education and knowledge, current practices with smoke-exposed patients and their smoking parents, and potential barriers to adherence with the SHS exposure-intervention guidelines.

Analyses

Survey responses were analyzed with descriptive statistics and standard logistic regression to determine what factors might predict guideline adherence. A priori significance was set at $P < 0.05$. Results were entered and analyzed by using SPSS 14.0 (SPSS Inc, Chicago, IL).

Role of the Funding Source

The funding source had no involvement with study design, data collection, analysis, interpretation, writing of the manuscript, or the decision to submit the manuscript for publication.

Results

Sample Characteristics

One hundred fifteen of 381 surveys were returned, yielding an overall response rate of 30 percent for this pilot study. Eighty-four pediatric otolaryngologists in practice and 31 senior otolaryngology residents in training were represented. Table 2 displays demographic data of the respondents.

Descriptive Analysis

Overall, descriptive analyses revealed low levels of tobacco-intervention training and low levels of adherence to the basic tenets of the general pediatrics SHS guidelines. Fifty percent of respondents reported no tobacco-intervention training in medical school, residency, or continuing medical education. Regarding adherence to the “5 A's” of tobacco intervention, 43 percent always asked about exposure, 46 percent always advised parents about the hazards of exposure, 44 percent always advised parents to create a smoke-free home, 35 percent always advised smoking parents to quit, 20 percent always assisted with tobacco cessation, and 10 percent assured tobacco-specific follow-up by providing a referral. Multiple barriers to guideline adherence were reported, including a lack of responsibility, lack of time, lack of confidence, negative emotional responses to smoking parents, and lack of knowledge.

Logistic Regression Analyses

Standard (direct entry) logistic regression analyses was performed after reducing potential predictor variables using principal components analysis to three factors named knowledge/education, negative emotional responses, and perceived barriers to tobacco intervention. These three factors were converted to Z scores. Table 3 shows logistic regression results for advising parents to quit smoking (overall model $P = 0.001$ with 17% of variance explained). The other models examining predictors of adherence to tobacco guidelines (Table 1) were similar to the cessation advice model in Table 3, suggesting that incrementally greater tobacco intervention knowledge/education and incrementally fewer perceived barriers to SHS actions predicted greater likelihood of adherence.

Discussion

This cross-sectional survey provides a snapshot of pediatric otolaryngologists' actions and attitudes with respect to children's exposure to parental SHS. Our pilot data not only suggest a need for further examination of pediatric otolaryngologists' practices with parental smoking but also provide potential areas for improvement in tobacco-intervention education. Among our data highlighting this need were the low levels of knowledge of pediatric SHS exposure, low levels of adherence to SHS-exposure guidelines, and numerous barriers that continue to inhibit appropriate application of these guidelines reflected in the responses from this sample of physicians. In fact, given the past decade's growing literature on the dangers of children's exposure to SHS along with the existence of guidelines to address this urgent public health problem, it is alarming that the vast majority of otolaryngologists surveyed were unaware of the pediatrics guidelines (58% reported that no guidelines exist and only 6% of those who knew about the guidelines reported the correct number of steps included). It is likely that inadequate tobacco-intervention education contributes to the low levels of SHS knowledge, given that 50 percent of respondents reported no tobacco-related education and 14 percent reported less than 2 hours of education. Another likely contributing factor is the lack of reporting of the pediatrics guidelines in the otolaryngology literature.

Although respondents' overall guideline knowledge and adherence was low, examining specific actions with respect to the 5 A's informs directions of future tobacco training to improve how otolaryngologists address SHS in their practice. Fewer physicians were engaging in actions that required more tobacco intervention and skill. Results from our regression analyses suggest that enhanced tobacco-specific education may improve the number of pediatric otolaryngologists performing these higher-level actions.

Respondents reported several perceived barriers to why they did not intervene with parental smokers including a lack of training, lack of time, lack of confidence, lack of knowledge, and other reasons often related to concerns that the parent is not the identified patient and potentially jeopardizing the physician-parent relationship. In our regression analyses, these perceived barriers were significant predictors of respondents' actions with patients exposed to SHS. We also identified other potential barriers to guideline adherence, although they were not significant in our regression models. One of these potential barriers was the lack of responsibility felt by many respondents. For example, less than half of these physicians agreed that SHS exposure is a serious problem for children with otolaryngologic disorders,

and only 16 percent of respondents felt that pediatric otolaryngologists should completely follow general pediatrics SHS guidelines if they existed despite the recent call from the US Surgeon General that all physicians always perform these actions when encountering smoking parents.¹ Another potential barrier we identified was negative emotional response to smoking parents, with physicians reporting feeling somewhat to extremely disgusted, angry/frustrated, and helpless when smelling smoke on a patient's parent. Clearly, many of these potential barriers can be addressed through training.

Limitations of this study include the low overall response rate and uneven gender and regional distributions, potentially sampling a skewed subset of this physician population. Therefore, our findings may not generalize to all pediatric otolaryngologists and otolaryngologists in training. Additionally, respondent bias toward inflating socially desirable responses may have affected our results. However, even with this potential bias, reported adherence to the basic tenets of the pediatrics SHS guidelines was poor, outcomes consistent with other research in this area. Finally, our data were cross-sectional and therefore unable to ascertain whether enhanced tobacco training would have the desired effect on improving physicians' SHS actions. Nonetheless, our data inform the otolaryngology community with regard to how it can improve training to impact tobacco-related morbidity and mortality and to improve overall patient care.

Conclusion

Our pilot study results show an opportunity to improve tobacco-intervention education among a segment of otolaryngology residents and pediatric otolaryngologists and provide specific targets for curriculum enhancement. Our regression models suggest that the most relevant factors include increasing SHS-intervention knowledge and reducing several perceived barriers to intervention. Our models provide direction to develop more logistically manageable solutions to address pediatric SHS exposure at the training level. A necessary first step is increasing awareness of this public health problem either by publication of the pediatrics guidelines in the otolaryngology literature or by the creation of SHS-exposure guidelines specific to pediatric otolaryngologists by the American Society of Pediatric Otolaryngology or the American Academy of Otolaryngology–Head and Neck Surgery. In closing, we see this as an excellent opportunity for the field of pediatric otolaryngology to improve patient care and to do their part in addressing a serious public health concern that could improve the health of tens of thousands of pediatric patients.

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References

1. Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General. Rockville, MD: US Department of Health and Human Services Centers of Disease Control and

Prevention Coordinating Center for Health Promotion National Center for Chronic Disease Prevention and Health Promotion; 2006.

2. With Understanding and Improving Health and Objectives for Improving Health. 2nd. Washington, DC: U.S. Government Printing Office; 2000. U.S. Department of Health and Human Services. Healthy People 2010.
3. Neto JFL, Hemb L, Silva DB. Systematic literature review of modifiable risk factors for recurrent acute otitis media in childhood. *J Pediatr*. 2006; 82:87–96.
4. Gryczynska D, Kobos J, Zakrzewska A. Relationship between passive smoking, recurrent respiratory tract infections and otitis media in children. *Int J Pediatr Otorhinolaryngol*. 1999; 49(Suppl 1):S275–8. [PubMed: 10577820]
5. Sandler DP, Wilcox AJ, Everson RB. Cumulative effects of lifetime passive smoking on cancer risk. *Lancet*. 1985; 1:312–5. [PubMed: 2857366]
6. Jones DT, Bhattacharyya N. Passive smoke exposure as a risk factor for airway complications during outpatient pediatric procedures. *Otolaryngol Head Neck Surg*. 2006; 135:12–6. [PubMed: 16815175]
7. Collins BN, Wileyto EP, Murphey MFG, et al. Adolescent environmental tobacco smoke exposure predicts academic achievement test failure. *J Adolesc Health*. 2007; 41:363–70. [PubMed: 17875462]
8. The Agency for Health Care Policy and Research Smoking Cessation Clinical Practice Guideline. *JAMA*. 1996; 275:1270–80. [PubMed: 8601960]
9. Rosenfeld RM, Sandhu S. Injury prevention counseling opportunities in pediatric otolaryngology. *Arch Otolaryngol Head Neck Surg*. 1996; 122:609–11. [PubMed: 8639290]
10. Collins BN, Levin K, Bryant-Stephens T. Pediatrician practices and attitudes about environmental tobacco smoke and parental smoking. *J Pediatr*. 2007; 150:547–52. [PubMed: 17452234]

Table 1
Synopsis of general pediatrics SHS exposure–intervention guidelines

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1. ASK. Take smoking histories from parents and guardians of children, and ask about smoking status and children's exposure to secondhand smoke at every visit.
 2. ADVISE. Inform parents about the health hazards of SHS and provide guidance on smoking cessation at every visit.
 3. ASSESS. Determine parents' readiness to change their in-home and vehicle smoking rules to protect their children from SHS. Assess parents' readiness to quit smoking at every visit to guide advice and assistance.
 4. ASSIST. Provide brief counseling to help parents set up clean indoor air environments for children. Provide referrals to specific smoking cessation programs or hotlines in the area.
 5. ASSURE. Maintain records of children's exposure to passive smoke. Provide follow-up assistance at every visit to monitor progress and provide brief problem solving advice or additional referrals to smoking programs as necessary.
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Table 2
Summary of physician respondent characteristics

	Total (n = 115)	Physicians in practice (n = 84)	Physicians in training (n = 31)
Years in practice *	17.5 ± 10.7	22.2 ± 8.7	4.9 ± 0.75
Sex †			
Female	15 (23)	10 (27)	5 (18)
Male	50 (77)	27 (73)	23 (82)
Hours of tobacco education			
None	57 (50)	54 (64)	3 (10)
<2 hours	16 (14)	12 (14)	4 (13)
2-4 hours	27 (23)	10 (12)	17 (55)
>4 hours	15 (13)	8 (9)	7 (23)
Region of practice †			
Northeast	18 (28)	8 (22)	10 (36)
Midwest	18 (28)	14 (38)	4 (14)
Southwest	8 (12)	5 (13)	3 (11)
Southeast	17 (26)	7 (19)	10 (36)
Northwest	4 (6)	3 (8)	1 (4)
Practice setting †			
Private	12 (19)	12 (32)	0
University	53 (81)	25 (68)	28 (100)
Smoking status			
Nonsmoker	115 (100)	84 (100)	31 (100)

* Years in practice reported as mean ± standard deviation; all other categories reported as count (percent).

† Category has a reduced number because of a required survey item reduction.

Table 3
Regression analysis summary for predictors of advising parents to quit smoking

Predictor	B	Wald	p value	Odds ratio	95 % CI	
					Lower	Upper
Knowledge/education *	.587	7.19	.007	1.799	1.171	2.762
Fewer perceived barriers *	.521	6.29	.012	1.684	1.121	2.532
Fewer negative emotions	-.252	1.56	.210	.777	.524	1.152
Constant	.309	2.31	.128			

CI, confidence interval.

* Statistically significant predictor.