POLICY STATEMENT Organizational Principles to Guide and Define the Child Health Care System and/or Improve the Health of all Children

American Academy of Pediatrics
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Clinical Practice Policy to Protect Children From Tobacco, Nicotine, and Tobacco Smoke

SECTION ON TOBACCO CONTROL

abstract

Tobacco dependence starts in childhood. Tobacco exposure of children is common and causes illness and premature death in children and adults, with adverse effects starting in the womb. There is no safe level of tobacco smoke exposure. Pediatricians should screen for use of tobacco and other nicotine delivery devices and provide anticipatory guidance to prevent smoking initiation and reduce tobacco smoke exposure. Pediatricians need to be aware of the different nicotine delivery systems marketed and available. Parents and caregivers are important sources of children's tobacco smoke exposure. Because tobacco dependence is a severe addiction, to protect children's health, caregiver tobacco dependence treatment should be offered or referral for treatment should be provided (such as referral to the national smoker's quitline at 1-800-QUIT-NOW). If the source of tobacco exposure cannot be eliminated, counseling about reducing exposure to children should be provided.

Health care delivery systems should facilitate the effective prevention, identification, and treatment of tobacco dependence in children and adolescents, their parents, and other caregivers. Health care facilities should protect children from tobacco smoke exposure and tobacco promotion. Tobacco dependence prevention and treatment should be part of medical education, with knowledge assessed as part of board certification examinations.

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STATEMENT OF PROBLEM

Tobacco harms children. There is no safe level of tobacco smoke exposure. Pediatricians have important opportunities to prevent the initiation of tobacco use and help children, parents, and caregivers obtain treatment for their tobacco dependence.

This statement describes clinical practice recommendations. Evidence quality is graded and recommendations generated as per Fig 1. An accompanying technical report describes the evidence to support these

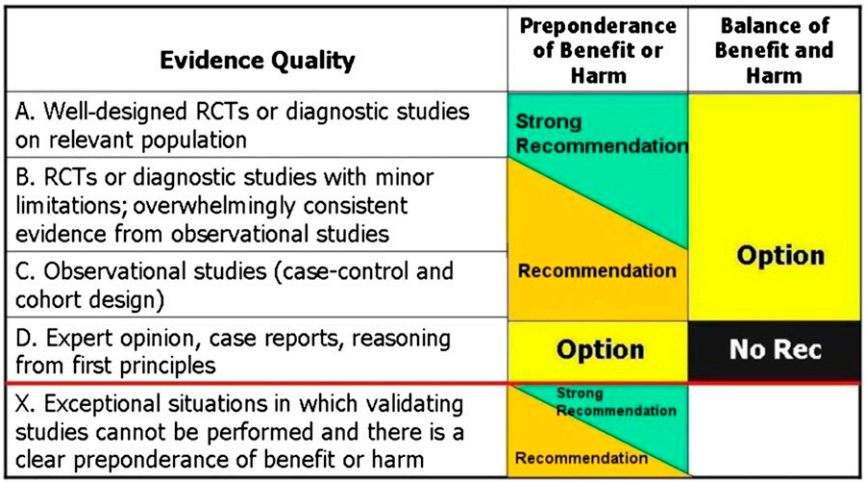

FIGURE 1
Evidence quality. RCT, randomized controlled study.

recommendations.[1] An accompanying policy statement describes public policy recommendations.[2]

DEFINITIONS

- Tobacco product: any nicotine delivery product, currently regulated or unregulated by the US Food and Drug Administration (FDA), which is not approved for safe and effective tobacco dependence treatment.
- Secondhand smoke: the smoke emitted from a tobacco product that is inhaled by a nonuser.
- Thirdhand smoke: the tobacco smoke that is absorbed onto surfaces and exposes the nonuser by either direct contact and dermal absorption and/or off-gassing and inhalation. Thirdhand smoke may react with oxidants and other compounds in the environment to yield secondary pollutants.[3]
- Electronic nicotine delivery systems: handheld devices that produce an aerosol from a solution typically containing nicotine, flavoring chemicals, and carrier solvents such as propylene glycol and vegetable glycerin (glycerol) for inhalation by the user. Alternate names for these products include electronic cigarettes, e-cigarettes, e-cigs, electronic cigars, e-cigars, electronic hookah, e-hookah, hookah sticks, personal vaporizers, mechanical mods, vape pens, and vaping devices.

NEW INFORMATION

Tobacco smoke exposure in utero causes long-lasting neurocognitive, behavioral, and respiratory harms. Thirdhand smoke has become recognized as another route of tobacco toxin exposure. Noncigarette tobacco products represent emerging threats to children's health. Teenagers become dependent on nicotine far earlier than previously believed. Tobacco dependence can be treated using the chronic disease model, with treatment initiated on the basis of severity and adjusted on the basis of control.

BACKGROUND

More than half of children in the United States have evidence of tobacco exposure.[4] Tobacco-related carcinogens measured in house dust samples of smokers are at levels sufficient to increase cancer risk,[5] and young children may have greater exposure. The harm from tobacco smoke does not end when a smoker extinguishes a cigarette.

Tobacco causes respiratory illness, cancer, cardiovascular disease, and premature death in children and adults.[6–15] In utero tobacco exposure increases risk of adverse fetal outcomes and can have long-lasting adverse health effects for the child.[16–28] Although sorting out in utero from postnatal effects is challenging, emerging data points to secondhand tobacco smoke exposure as an independent risk factor for neurobehavioral disorders (including attention-deficit/hyperactivity disorder, learning disabilities, and conduct disorders),[29–31] decreased glomerular filtration rate in adolescents,[32] and preclinical atherosclerosis in adolescents.[33,34] There is no safe level of tobacco smoke exposure.[35]

Parent and caregiver smoking are important sources of a child's tobacco smoke exposure.[36,37] Parental tobacco dependence increases the risk of their children's tobacco use initiation and dependence.[38–40] Interventions to encourage parental tobacco cessation to benefit their children's health are most effective when the intervention includes pharmacotherapy.[41] Addressing and treating parent and caregiver tobacco dependence are important parts of children's health care.

Symptoms of tobacco dependence can develop rapidly after initiation of tobacco use.[42] The developing brains of children and adolescents are particularly susceptible to tobacco dependence. Nearly 90% of current smokers started tobacco use before their 18th birthday.[43] Adolescents from low-income families and lesbian/gay/bisexual/transgender youth shoulder a disproportionate share of the tobacco dependence burden.[44,45]

Alternative (other than cigarette) tobacco product use is rapidly gaining popularity among youth.[46] These include oral tobacco (chewing tobacco; moist snuff, also called "dip"), flavored cigars, pipes, snus (a moist tobacco product placed between the cheek and gum),

hookahs (water pipes), and electronic nicotine delivery devices. Other tobacco products include bidis (tobacco wrapped in a tendu leaf), kreteks (tobacco flavored with cloves),[47] and dissolvable tobacco products (with appearance similar to breath mints or toothpicks).[48] Many adolescents use both cigarette and noncigarette tobacco products.[49]

RECOMMENDED ACTIONS FOR PEDIATRICIANS

1. **Inquire about tobacco use and tobacco smoke exposure as part of health supervision visits and visits for diseases that may be caused or exacerbated by tobacco smoke exposure.**

Recommendation Strength: Strong Recommendation

Questions for parents that can be used to identify tobacco exposure include the following[50,51]:

a. Does your child live with anyone who uses tobacco?

b. Does anyone who provides care for your child smoke?

c. Does your child visit places where people smoke?

d. Does anyone ever smoke in your home?

e. Does anyone ever smoke in your car?

f. Do you ever smell smoke from your neighbors in or near your home or apartment?

Pediatricians need to be aware of the different terminology that families may use for tobacco products. Because many families may not consider electronic nicotine delivery systems as "tobacco," questions may need to be modified to include "vape" or "vaping" and/or use of electronic cigarettes, hookah sticks, e-hookahs, and/or vape pens. Similarly, pediatricians may need to clarify what is being smoked because in some areas, marijuana smoking is also prevalent, and marijuana smoke/vapor contains many harmful, toxic, and carcinogenic chemicals.

Children can be exposed to tobacco smoke if they live in or are cared for near places where smoking is allowed, such as in multi-unit housing.[52] Pediatricians can help parents in advocating for a tobacco-free environment for their child.

Innovative approaches to screening include using an electronically administered questionnaire that, on the basis of patient responses, generates "just in time" prompts for the pediatrician.[53]

Identifying adolescent tobacco use can be challenging. Screening questions can provide an opening for the pediatrician. Keep in mind that the tobacco product used might not be cigarettes.

Useful questions include the following[50]:

a. Do any of your friends use tobacco?

b. Have you ever tried a tobacco product?

c. How many times have you tried (name of tobacco product)?

d. How often do you use (name of tobacco product)?

e. Do you friends use e-cigarettes, e-hookah, or vape?

f. Have you tried an e-cigarette, e-hookah, or vape?

2. **Include tobacco use prevention as part of anticipatory guidance.**

Recommendation Strength: Strong Recommendation

The US Preventive Services Task Force recommends that primary care physicians provide interventions, including education or brief counseling, to prevent initiation of tobacco use in school-age children and adolescents. Counseling from a health care provider reduces the risk for smoking initiation.[54] Messages should be clear, personally relevant, and age appropriate.

One of the most important things a child can do to prepare for a healthy life is not start using tobacco. Experimenting with tobacco use is not safe. Messages should start as early as children are developmentally ready to understand them, usually approximately 5 years of age. Messages that may resonate more with adolescents include the effects of tobacco use on appearance, breath, and sports performance; lack of benefit for weight loss[43]; how much money they would have to spend to continue their tobacco addiction; and how the tobacco industry deceives them. Other messages may include how fast tobacco dependence develops and the severity of tobacco addiction. The pediatrician should ask children and adolescents to make a commitment to be tobacco free and help them to identify their own reasons for being tobacco free.

Messages need to include a specific focus on electronic nicotine delivery systems. The vast majority of youth are regularly exposed to electronic nicotine delivery system advertising and promotion.[55] Most teens mistakenly believe that electronic nicotine delivery systems are safe, and many teens are not even aware that the devices contain nicotine or that nicotine is highly addictive.[56,57]

3. **Address parent/caregiver tobacco dependence as part of pediatric health care.**

Recommendation Strength: Strong Recommendation

Parental tobacco smoking is an important source of a child's tobacco smoke exposure, thus addressing parental and caregiver tobacco dependence is important to protect the health of the child.

3a. **Recommend tobacco dependence treatment of tobacco-dependent parents and caregivers.**

Recommendation Strength: Strong Recommendation

The US Public Health Service–sponsored evidence-based guideline "Treating Tobacco Use and Dependence: 2008

Update" recommends that "Counseling and medication are effective when used by themselves for treating tobacco dependence. The combination of counseling and medication, however, is more effective than either alone. Thus, clinicians should encourage all adults making an attempt to stop tobacco to use both counseling and medication."[58]

3b. Implement systems to identify and offer counseling, treatment, treatment recommendations, and/or referral for tobacco-dependent parents.

Recommendation Strength: Recommendation

In the context of protecting their children's health, parents should be encouraged to stop smoking and should be offered tobacco dependence treatment, treatment recommendations, and/or referral. Specific and personally relevant information about how their tobacco dependence affects their children's health should be offered. Most parents expect physicians to address tobacco dependence and value receiving information about treatment from their children's pediatrician.[59] Parents may be motivated to accept tobacco dependence treatment to benefit the health of their children as well as their own health.[41] Even brief advice can increase smoking cessation rates.[60] Recommendations should be appropriate to the parent's readiness to change. If a parent is not yet ready for tobacco dependence treatment, smoke-free policies for the home and car should be advised.

The Clinical Effort Against Secondhand Smoke Exposure (CEASE) program is a practical program for addressing parental tobacco dependence treatment that can be easily implemented in the pediatrician's office. CEASE focuses on the principles of ask ("Does your child live with anyone who uses tobacco?"), assist ("As your child's pediatrician [or nurse], I can help you quit tobacco and help you have a tobacco-free home and car"), and refer (refer to the national smokers' quitline: 1-800-QUIT-NOW).[61] CEASE program materials are available at http://www.ceasetobacco.org.

Tobacco dependence is not simply a bad habit; it is often a severe addiction. Nicotine causes changes to brain structure and chemistry such that it is difficult to feel normal without it.[62] Severity of nicotine withdrawal can vary from "wanting" (a mild desire to smoke that is short lived and easily ignored) to "craving" (a stronger urge to smoke that is more persistent and difficult to ignore) or "needing" (an intense and urgent desire to smoke that is unpleasant and unremitting).[63] Similar to the principles of control of other severe chronic illnesses, the disease severity guides initiation of pharmacotherapy, and disease control guides adjustment of therapy. The risk of relapse to smoking is minimized when there are minimal to no withdrawal symptoms.[50]

Pharmacotherapy for tobacco dependence includes the long-acting nicotine patch (available over the counter) as well as bupropion and varenicline (which require a prescription). Shorter-acting medications can be used as needed for relief of nicotine withdrawal symptoms or as premedication before situations or events that trigger smoking. These medications include nicotine gum and lozenges (over the counter), nicotine inhaler (prescription), and nicotine nasal spray (prescription). The combination of 2 or more of these medications is more effective than 1 medication alone.[58] Combination therapy is particularly useful for those with moderate or severe levels of tobacco dependence.[50] Combination therapy with the nicotine patch (daily) and nicotine gum or lozenge (ad libitum) has similar effectiveness to the prescription agent varenicline[58] and can be recommended for those with moderate or severe tobacco dependence.[50] Starting nicotine replacement before stopping smoking can help a person to reduce smoking and get ready to stop.[64,65]

Use of pharmacotherapy substantially improves rates of stopping smoking.[58] Pharmacotherapy appropriate to the level of tobacco dependence severity (when initiating treatment) and control (when adjusting treatment) can be offered to or recommended for tobacco-dependent parents or caregivers. Similar to other illnesses of children (such as scabies, pertussis, and meningococcemia) that require treatment of household members, pediatricians can recommend or prescribe tobacco dependence treatment to parents or caregivers to protect the child's health. Over-the-counter nicotine replacement therapies (nicotine patch, gum, or lozenge) are effective; however, to be covered by health insurance, a prescription may be needed.

Before prescribing for tobacco dependence therapy to parents, pediatricians should verify that their medical liability insurance provides coverage for care provided to adults. If the pediatrician elects to prescribe for parents, he or she should conduct an appropriate assessment of disease (tobacco dependence), consider possible contraindications to the medications, counsel about risks and benefits, provide recommendations for follow-up, and provide appropriate treatment. Pediatricians should follow state regulations and institutional policies for charting on care provided for parents and caregivers to benefit the health of the child. Electronic health records systems should facilitate adherence to documentation requirements without placing excessive burdens on the parent or pediatrician. Payers should pay for services; in cases in which they do not, pediatricians should code

appropriately and advocate for the appropriate payment by health care payers for services provided. Up-to-date information about coding is available online at: http://www2.aap.org/richmondcenter/CodingPayment.html.

4. Offer tobacco dependence treatment and/or referral to adolescents who want to stop smoking.

Recommendation Strength: Strong Recommendation

4a. Tobacco dependence pharmacotherapy can be considered for moderate to severely tobacco-dependent adolescents who want to stop smoking.

Recommendation Strength: Option

Treatment should be appropriate to the adolescent's level of tobacco dependence, readiness to change, and treatments he or she is ready to accept. Research on the treatment of adolescent tobacco dependence is limited. Behaviorally based programs are beneficial; however, they work best for those with minimal to mild tobacco dependence.[66] Effective behaviorally based strategies have focused on problem-solving skills and providing support and encouragement.[58]

The "5 As" model (Ask, Advise, Assess, Assist, Arrange follow-up) describes a counseling intervention that improves tobacco use cessation rates in adults and is recommended by US Public Health Service Clinical Practice Guidelines.[58] An adaptation of this model for youth[67] includes the following: (1) Ask—about and document tobacco product use at all clinical encounters. (2) Advise—in a clear strong manner the personally relevant risks of continued tobacco use and the personally relevant benefits to stopping tobacco use. (3) Assess—the severity of tobacco dependence, previous history of attempts to stop smoking, and changes that the adolescent is ready to make. (4) Assist—tailor support to the adolescent's readiness to change and severity of addiction. For the adolescent ready to stop smoking, review lessons learned from previous attempts to stop smoking, discuss anticipated challenges, and discuss coping strategies. Provide concrete and readily accessible support and resources such as stop smoking support offered by telephone, text message, smartphone app, or the Internet and/or referral to local community or school-based resources (if available) (Table 1). (5) Arrange follow-up. Close follow-up is important because nonadherence and relapse are common. For the adolescent not ready to stop smoking, a motivational counseling intervention based on the "5Rs" (Relevance, Risks, Rewards, Roadblocks, and Repetition) can be used.

Research on pharmacotherapy of moderate to severe adolescent tobacco dependence is limited by short courses of treatment, high rates of nonadherence, and high rates of relapse after discontinuation of therapy.[68–71] Given the severe harms of tobacco dependence and the documented effectiveness of tobacco dependence pharmacotherapy in adults, a tobacco-dependent adolescent who wants treatment can be offered pharmacotherapy (medications that are FDA-approved as effective for tobacco dependence treatment in adults) appropriate to the severity of his or her tobacco dependence and his or her readiness to change as part of a tobacco dependence treatment plan.

As with treatment of any severe chronic illness, patients should be monitored for adverse effects of therapy, adherence to medication use recommendations, and achievement of treatment goals. Given the high rates of nonadherence to therapy and high rates of relapse of tobacco use among adolescents, close follow-up is recommended.

Pediatricians should also be aware that comorbidities of substance abuse

TABLE 1 Behaviorally Based Tobacco Cessation Resources for Adolescents

Sponsor	Program	Description
National Cancer Institute	1-800-QUIT-NOW	National number that links the caller to his or her local or state telephonic quitline.
National Cancer Institute	1-877-44U-QUIT	Telephonic smoking cessation support from National Cancer Institute counselors. Support is available in both English and Spanish.
National Cancer Institute	SmokefreeTXT	A mobile text messaging program that provides tips, advice, and encouragement for stopping smoking.
National Cancer Institute	quitSTART app	A smartphone-based app made for teens that provides tailored tips, inspiration, and challenges to help smokers become smoke free.
National Cancer Institute	teen.smokefree.gov	An Internet site designed for teenagers that hosts the National Cancer Institute's tobacco prevention and cessation resources for teenagers.
MD Anderson Cancer Center	A Smoking Prevention Interactive Experience (ASPIRE) https://aspire.mdanderson.org/aspirestudent	An Internet-based program that delivers an individually tailored interactive smoking prevention and cessation curriculum that can be used by individuals or in the school setting.

and psychiatric disorders may accompany tobacco dependence[72] and may make tobacco dependence more difficult to treat. These comorbidities, when identified, should be addressed through appropriate referral.

In the United States, tobacco dependence treatment medications have not been approved by the FDA for use by people younger than 18 years. There is, however, no biological or cognitive rationale to have 18 years as the cutoff for offering effective pharmacotherapy of tobacco dependence. To legally obtain any FDA-approved tobacco dependence treatment product (including the over-the-counter products), an adolescent needs a prescription from a licensed health care provider.

5. Offer tobacco-dependent individuals quitline referral.

Recommendation Strength: Strong Recommendation

Free (to the user) telephonic tobacco dependence treatment is beneficial and has been shown to improve tobacco cessation rates.[73] Such support is available at 1-800-QUIT-NOW in the United States. SmokefreeTXT (to enroll, text the word QUIT to 47848 from a mobile phone) may be useful for those who prefer a text message–based intervention.

6. Consider potential for neuropsychiatric symptoms with tobacco dependence treatment.

Recommendation Strength: Recommendation

There is an increased risk of suicidal ideation and suicide both among continuing smokers and among those being treated for tobacco dependence.[74–78] In postmarketing surveillance, suicidal ideation and suicide have been reported among patients taking varenicline and bupropion, with a Black Box warning issued by the FDA for both medications.[79] Population-based studies suggest that rates of fatal and nonfatal self-harm are not different among adults who received varenicline, bupropion, or nicotine replacement.[80] Neuropsychiatric symptoms associated with tobacco dependence treatment may reflect inadequate control of nicotine withdrawal.[50]

7. Do not recommend electronic nicotine delivery systems for tobacco dependence treatment.

Recommendation Strength: Strong Recommendation

Electronic nicotine delivery systems are not FDA-approved for tobacco dependence treatment and have not been shown to be safe or effective for tobacco dependence treatment.[81] One randomized controlled clinical trial of electronic cigarettes found low rates of stopping smoking with no significant difference between nicotine-containing and placebo devices in smoking cessation rates.[82] Among adolescents, the use of electronic cigarettes is associated with decreased rates of smoking cessation.[83]

There is currently no regulation on content or manufacturing standards for electronic nicotine delivery systems. Carcinogens, toxicants, metals, and silicates have been found in the emissions from these devices.[84–86] They can expose nonusers to the nicotine and other toxicants in the device emissions.[81] Some of the commonly used flavoring chemicals are known respiratory irritants.[87] These products are being aggressively marketed to youth.[88] Flavorings, including candy and fruit flavors, increase the appeal to youth. The concentrated nicotine solution used in these devices is a poisoning risk for young children, with 1 child already known to have died of its accidental ingestion.[89,90]

8. If the sources of a child's tobacco smoke exposure cannot be eliminated, provide counseling about strategies to reduce the child's tobacco smoke exposure.

Recommendation Strength: Recommendation

As a harm reduction measure, smoking bans in the home and car and staying away from places where people are smoking should be recommended if parents and caregivers are not ready to stop smoking or consider starting tobacco dependence treatment. Smoke-free homes and cars may reduce a child's tobacco smoke exposure but are unlikely to eliminate a child's tobacco smoke exposure as long as household members and caregivers are smokers.[37,91,92]

BEST PRACTICES FOR HEALTH CARE SYSTEMS

Because research on health systems interventions to protect children from tobacco is still in its infancy, the recommendations that follow are based on American Academy of Pediatrics expert consensus.

Health care delivery systems should be structured to facilitate the effective prevention, identification, and treatment of tobacco dependence in children and adolescents, parents, and caregivers. Health care facilities should protect children from tobacco smoke exposure and tobacco promotion.

Health records systems should facilitate the identification of tobacco-exposed and tobacco-dependent children and adolescents and allow for rapid, accessible identification of previously documented tobacco smoke exposure and interventions. Electronic health records systems should provide easy-to-access, appropriate, and regulatory-compliant methods to document assessment, counseling, and recommendations or prescription for treatment of tobacco dependence for the child's parents and/or caregivers provided during a medical encounter for the child. Children's health care payers

should appropriately compensate these efforts.

Hospital systems should offer tobacco dependence treatment to parents of hospitalized children, including nicotine replacement therapy. The goals of treatment include controlling nicotine withdrawal symptoms so that the parent can stop smoking comfortably and helping the tobacco-dependent parent avoid withdrawal while not smoking on hospital property.

Tobacco dependence treatment programs should be available to adolescents who are tobacco dependent. Health care delivery systems should consider collaborations with schools to minimize barriers to adolescents' ability to access these programs.

Health care facilities should not subscribe to or display magazines, videos, or other materials that contain advertisements for tobacco products or images that model any tobacco product use. Campuses of institutions or offices where children's health care is delivered should be tobacco free, including both indoor and outdoor spaces. To protect children, retail-based clinics should not be located within or near retail establishments that promote or sell tobacco products.

RECOMMENDATIONS FOR MEDICAL EDUCATION

Training should be provided to all health care providers to enable them to deliver smoking cessation interventions effectively. Tobacco dependence prevention and treatment should be part of pediatric resident education and postgraduate continuing medical education. Although many residency programs have made strides in addressing knowledge about harms of tobacco smoke exposure and tobacco dependence,[93] more efforts are needed. Tobacco dependence prevention and treatment should be included as part of the core pediatric residency curriculum and assessed on pediatrics board certification and maintenance of certification examinations. This training is especially important for primary care physicians and for medical subspecialists who treat tobacco-related diseases. Training of physicians and allied health professionals in tobacco dependence treatment should be adequately funded. Because tobacco dependence is one of the most common severe chronic illnesses of adolescents and adults, it is imperative that there be adequate funding to train health care providers in treating tobacco dependence.

CONCLUSIONS

Tobacco dependence is a pediatric disease. Tobacco smoke exposure harms children's health. Pediatricians can and should take actions to protect children and adolescents from tobacco dependence and tobacco smoke exposure. To protect children's health, pediatricians can and should counsel parents and caregivers who use tobacco about the importance of and strategies for stopping tobacco product use, provide referral for additional tobacco dependence treatment resources (such as to telephone quitlines), and consider recommending or prescribing tobacco dependence treatment medication for parents and caregivers. Pediatricians should provide brief counseling to all children to prevent tobacco use initiation and screen all teenagers for tobacco and nicotine use. Tobacco dependence treatment and/or referral should be offered to adolescents who want to stop smoking.

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ABBREVIATIONS

CEASE: Clinical Effort Against Secondhand Smoke Exposure
FDA: US Food and Drug Administration

REFERENCES

1. Farber HJ, Groner JA; American Academy of Pediatrics Section on Tobacco Control. Technical report: protecting children from tobacco, nicotine, and tobacco smoke. *Pediatrics*. 2015;136(5):e1439
2. American Academy of Pediatrics. Section on Tobacco Control. Policy statement: public policy to protect children from tobacco, nicotine, and tobacco smoke. Pediatrics. 2015;136(5):998–1007
3. Matt GE, Quintana PJ, Destaillats H, et al. Thirdhand tobacco smoke: emerging evidence and arguments for a multidisciplinary research agenda. *Environ Health Perspect*. 2011;119(9):1218–1226
4. Centers for Disease Control and Prevention (CDC). Vital signs: nonsmokers' exposure to secondhand smoke—United States, 1999–2008. *MMWR Morb Mortal Wkly Rep*. 2010;59(35):1141–1146
5. Ramírez N, Özel MZ, Lewis AC, Marcé RM, Borrull F, Hamilton JF. Exposure to nitrosamines in thirdhand tobacco smoke increases cancer risk in non-smokers. *Environ Int*. 2014;71:139–147 doi:10.1016/j.envint.2014.06.012
6. Boldo E, Medina S, Oberg M, et al. Health impact assessment of environmental tobacco smoke in European children: sudden infant death syndrome and asthma episodes. *Public Health Rep*. 2010;125(3):478–487

7. Liebrechts-Akkerman G, Lao O, Liu F, et al. Postnatal parental smoking: an important risk factor for SIDS. *Eur J Pediatr*. 2011;170(10):1281–1291
8. Martín-Pujol A, Fernández E, Schiaffino A, et al; RESPIR·NET research group. Tobacco smoking, exposure to second-hand smoke, and asthma and wheezing in schoolchildren: a cross-sectional study. *Acta Paediatr*. 2013;102(7): e305–e309
9. Millett C, Lee JT, Laverty AA, Glantz SA, Majeed A. Hospital admissions for childhood asthma after smoke-free legislation in England. *Pediatrics*. 2013; 131(2). Available at: www.pediatrics.org/cgi/content/full/131/2/e495
10. Burke H, Leonardi-Bee J, Hashim A, et al. Prenatal and passive smoke exposure and incidence of asthma and wheeze: systematic review and meta-analysis. *Pediatrics*. 2012;129(4):735–744
11. Farber HJ, Wattigney W, Berenson G. Trends in asthma prevalence: the Bogalusa Heart Study. *Ann Allergy Asthma Immunol*. 1997;78(3):265–269
12. Mackay D, Haw S, Ayres JG, Fischbacher C, Pell JP. Smoke-free legislation and hospitalizations for childhood asthma. *N Engl J Med*. 2010;363(12):1139–1145
13. DiFranza JR, Masaquel A, Barrett AM, Colosia AD, Mahadevia PJ. Systematic literature review assessing tobacco smoke exposure as a risk factor for serious respiratory syncytial virus disease among infants and young children. *BMC Pediatr*. 2012;12:81 doi:10.1186/1471-2431-12-81
14. Semple MG, Taylor-Robinson DC, Lane S, Smyth RL. Household tobacco smoke and admission weight predict severe bronchiolitis in infants independent of deprivation: prospective cohort study. *PLoS One*. 2011;6(7):e22425
15. Suzuki M, Thiem VD, Yanai H, et al. Association of environmental tobacco smoking exposure with an increased risk of hospital admissions for pneumonia in children under 5 years of age in Vietnam. *Thorax*. 2009;64(6): 484–489
16. Jaakkola JJ, Jaakkola N, Zahlsen K. Fetal growth and length of gestation in relation to prenatal exposure to environmental tobacco smoke assessed by hair nicotine concentration. *Environ Health Perspect*. 2001;109(6):557–561
17. Leonardi-Bee J, Britton J, Venn A. Secondhand smoke and adverse fetal outcomes in nonsmoking pregnant women: a meta-analysis. *Pediatrics*. 2011;127(4):734–741
18. Mitchell EA, Ford RP, Stewart AW, et al. Smoking and the sudden infant death syndrome. *Pediatrics*. 1993;91(5): 893–896
19. Behm I, Kabir Z, Connolly GN, Alpert HR. Increasing prevalence of smoke-free homes and decreasing rates of sudden infant death syndrome in the United States: an ecological association study. *Tob Control*. 2012;21(1):6–11
20. Kwok MK, Schooling CM, Lam TH, Leung GM. Paternal smoking and childhood overweight: evidence from the Hong Kong "Children of 1997." *Pediatrics*. 2010; 126(1). Available at: www.pediatrics.org/cgi/content/full/126/1/e46
21. Ino T, Shibuya T, Saito K, Inaba Y. Relationship between body mass index of offspring and maternal smoking during pregnancy. *Int J Obes*. 2012;36(4): 554–558
22. Weng SF, Redsell SA, Nathan D, Swift JA, Yang M, Glazebrook C. Estimating overweight risk in childhood from predictors during infancy. *Pediatrics*. 2013;132(2). Available at: www.pediatrics.org/cgi/content/full/132/2/e414
23. Behl M, Rao D, Aagaard K, et al. Evaluation of the association between maternal smoking, childhood obesity, and metabolic disorders: a national toxicology program workshop review. *Environ Health Perspect*. 2013;121(2): 170–180
24. Ji BT, Shu XO, Linet MS, et al. Paternal cigarette smoking and the risk of childhood cancer among offspring of nonsmoking mothers. *J Natl Cancer Inst*. 1997;89(3):238–244
25. Mucci LA, Granath F, Cnattingius S. Maternal smoking and childhood leukemia and lymphoma risk among 1,440,542 Swedish children. *Cancer Epidemiol Biomarkers Prev*. 2004;13(9): 1528–1533
26. Brooks DR, Mucci LA, Hatch EE, Cnattingius S. Maternal smoking during pregnancy and risk of brain tumors in the offspring. A prospective study of 1.4 million Swedish births. *Cancer Causes Control*. 2004;15(10):997–1005
27. Oh SS, Tcheurekdjian H, Roth LA, et al. Effect of secondhand smoke on asthma control among black and Latino children. *J Allergy Clin Immunol*. 2012;129(6): 1478–83.e7
28. Duijts L, Jaddoe VW, van der Valk RJ, et al. Fetal exposure to maternal and paternal smoking and the risks of wheezing in preschool children: the Generation R Study. *Chest*. 2012;141(4): 876–885
29. Kabir Z, Connolly GN, Alpert HR. Secondhand smoke exposure and neurobehavioral disorders among children in the United States. *Pediatrics*. 2011;128(2):263–270
30. Twardella D, Bolte G, Fromme H, Wildner M, von Kries R; GME Study Group. Exposure to secondhand tobacco smoke and child behaviour—results from a cross-sectional study among preschool children in Bavaria. *Acta Paediatr*. 2010; 99(1):106–111
31. Yolton K, Dietrich K, Auinger P, Lanphear BP, Hornung R. Exposure to environmental tobacco smoke and cognitive abilities among U.S. children and adolescents. *Environ Health Perspect*. 2005;113(1):98–103
32. García-Esquinas E, Loeffler LF, Weaver VM, Fadrowski JJ, Navas-Acien A. Kidney function and tobacco smoke exposure in US adolescents. *Pediatrics*. 2013;131(5). Available at: www.pediatrics.org/cgi/content/full/131/5/e1415
33. Kallio K, Jokinen E, Saarinen M, et al. Arterial intima-media thickness, endothelial function, and apolipoproteins in adolescents frequently exposed to tobacco smoke. *Circ Cardiovasc Qual Outcomes*. 2010;3(2):196–203
34. Groner JA, Huang H, Nagaraja H, Kuck J, Bauer JA. Secondhand smoke exposure and endothelial stress in children and adolescents. *Acad Pediatr*. 2015;15(1): 54–60
35. US Department of Health and Human Services. *The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General*. Atlanta, GA: US Department of Health and Human Services, Centers for Disease Control and Prevention, Coordinating Center for Health Promotion, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health; 2006

36. Farber HJ, Knowles SB, Brown NL, et al. Secondhand tobacco smoke in children with asthma: sources of and parental perceptions about exposure in children and parental readiness to change. *Chest*. 2008;133(6):1367–1374

37. Groner JA, Hoshaw-Woodard S, Koren G, Klein J, Castile R. Screening for children's exposure to environmental tobacco smoke in a pediatric primary care setting. *Arch Pediatr Adolesc Med*. 2005;159(5):450–455

38. Mays D, Gilman SE, Rende R, Luta G, Tercyak KP, Niaura RS. Parental smoking exposure and adolescent smoking trajectories. *Pediatrics*. 2014;133(6): 983–991

39. Vuolo M, Staff J. Parent and child cigarette use: a longitudinal, multigenerational study. *Pediatrics*. 2013; 132(3). Available at: www.pediatrics.org/cgi/content/full/132/3/e568

40. Selya AS, Dierker LC, Rose JS, Hedeker D, Mermelstein RJ. Risk factors for adolescent smoking: parental smoking and the mediating role of nicotine dependence. *Drug Alcohol Depend*. 2012; 124(3):311–318

41. 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):141–152

42. Doubeni CA, Reed G, Difranza JR. Early course of nicotine dependence in adolescent smokers. *Pediatrics*. 2010; 125(6):1127–1133

43. US Department of Health and Human Services. *Preventing Tobacco Use Among Youth and Young Adults: A Report of the Surgeon General*. Atlanta, GA: US 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; 2012

44. Corliss HL, Wadler BM, Jun HJ, et al. Sexual-orientation disparities in cigarette smoking in a longitudinal cohort study of adolescents. *Nicotine Tob Res*. 2013;15(1):213–222

45. Blosnich JR, Jarrett T, Horn K. Racial and ethnic differences in current use of cigarettes, cigars, and hookahs among lesbian, gay, and bisexual young adults. *Nicotine Tob Res*. 2011;13(6):487–491

46. Nasim A, Khader Y, Blank MD, Cobb CO, Eissenberg T. Trends in alternative tobacco use among light, moderate, and heavy smokers in adolescence, 1999-2009. *Addict Behav*. 2012;37(7):866–870

47. Centers for Disease Control and Prevention. Tobacco use among middle and high school students—United States, 2000–2009. *MMWR Morb Mortal Wkly Rep*. 201027;59(33):1063–1068

48. McMillen R, Maduka J, Winickoff J. Use of emerging tobacco products in the United States. *J Environ Public Health*. 2012; 2012:989474. Published online May 10, 2012. doi:10.1155/2012/989474doi: 10.1155/2012/989474

49. Saunders C, Geletko K. Adolescent cigarette smokers' and non-cigarette smokers' use of alternative tobacco products. *Nicotine Tob Res*. 2012;14(8): 977–985

50. Sachs DPL, Leone FT, Farber HJ, et al. *American College of Chest Physicians Tobacco-Dependence Treatment Tool Kit*. 3rd ed. Northbrook, IL: American College of Chest Physicians; November 2009. Available at: http://tobaccodependence.chestnet.org. Accessed July 27, 2015

51. Clinical Effort Against Secondhand Smoke Exposure (CEASE). Available at: http://www2.massgeneral.org/ceasetobacco. Accessed July 27, 2015

52. Wilson KM, Klein JD, Blumkin AK, Gottlieb M, Winickoff JP. Tobacco-smoke exposure in children who live in multiunit housing. *Pediatrics*. 2011;127(1):85–92 doi:10.1542/peds.2010-2046

53. Downs SM, Zhu V, Anand V, Biondich PG, Carroll AE. The CHICA smoking cessation system. *AMIA Annu Symp Proc*. 2008: 2008;166–170

54. Moyer VA; U.S. Preventive Services Task Force. Primary care interventions to prevent tobacco use in children and adolescents: U.S. preventive services task force recommendation statement. *Pediatrics*. 2013;132(3):560–565

55. Duke JC, Lee YO, Kim AE, et al. Exposure to electronic cigarette television advertisements among youth and young adults. *Pediatrics*. 2014;134(1). Available at: www.pediatrics.org/cgi/content/full/134/1/e29

56. Anand V, McGinty KL, O'Brien K, Guenthner G, Hahn E, Martin CA. E-cigarette use and beliefs among urban public high school students in North Carolina. *J Adolesc Health*. 2015;57(1): 46–51

57. Roditis ML, Halpern-Felsher B. Adolescents' perceptions of risks and benefits of conventional cigarettes, e-cigarettes, and marijuana: a qualitative analysis. *J Adolesc Health*. 2015;57(2): 179–185

58. Fiore MC, Jaén CR, Baker TB, et al. *Treating Tobacco Use and Dependence: 2008 Update. Clinical Practice Guideline*. Rockville, MD: US Department of Health and Human Services, Public Health Service; May 2008

59. Winickoff JP, Tanski SE, McMillen RC, Klein JD, Rigotti NA, Weitzman M. Child health care clinicians' use of medications to help parents quit smoking: a national parent survey. *Pediatrics*. 2005;115(4):1013–1017

60. Stead LF, Buitrago D, Preciado N, Sanchez G, Hartmann-Boyce J, Lancaster T. Physician advice for smoking cessation. *Cochrane Database Syst Rev*. 2013;5(5): CD000165

61. Winickoff JP, Nabi-Burza E, Chang Y, et al. Implementation of a parental tobacco control intervention in pediatric practice. *Pediatrics*. 2013;132(1):109–117

62. US Department of Health and Human Services. *How Tobacco Smoke Causes Disease: The Biology and Behavioral Basis for Smoking-Attributable Disease: A Report of the Surgeon General*. Atlanta, GA: US 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; 2010

63. DiFranza J. New insights into the development of tobacco dependence. *Pediatr Allergy Immunol Pulmonol*. 2012; 25(2):76–79

64. Rose JE, Behm FM, Westman EC, Kukovich P. Precessation treatment with nicotine skin patch facilitates smoking cessation. *Nicotine Tob Res*. 2006;8(1):89–101

65. Rose JE, Herskovic JE, Behm FM, Westman EC. Precessation treatment with nicotine patch significantly increases abstinence rates relative to conventional treatment. *Nicotine Tob Res*. 2009;11(9):1067–1075

66. Sussman S, Dent CW, Lichtman KL. Project EX: outcomes of a teen smoking cessation program. *Addict Behav*. 2001; 26(3):425–438

67. Pbert L, Farber H, Horn K, et al; American Academy of Pediatrics, Julius B. Richmond Center of Excellence Tobacco Consortium. State-of-the-art office-based interventions to eliminate youth tobacco use: the past decade. *Pediatrics*. 2015; 135(4):734–747

68. Moolchan ET, Robinson ML, Ernst M, et al. Safety and efficacy of the nicotine patch and gum for the treatment of adolescent tobacco addiction. *Pediatrics*. 2005; 115(4). Available at: www.pediatrics.org/cgi/content/full/115/4/e407

69. Muramoto ML, Leischow SJ, Sherrill D, Matthews E, Strayer LJ. Randomized, double-blind, placebo-controlled trial of 2 dosages of sustained-release bupropion for adolescent smoking cessation. *Arch Pediatr Adolesc Med*. 2007;161(11):1068–1074

70. Bailey SR, Crew EE, Riske EC, Ammerman S, Robinson TN, Killen JD. Efficacy and tolerability of pharmacotherapies to aid smoking cessation in adolescents. *Paediatr Drugs*. 2012;14(2):91–108

71. Rubinstein ML, Benowitz NL, Auerback GM, Moscicki AB. A randomized trial of nicotine nasal spray in adolescent smokers. *Pediatrics*. 2008;122(3). Available at: www.pediatrics.org/cgi/content/full/122/3/e595

72. US Department of Health and Human Services. *The Health Consequences of Smoking: 50 Years of Progress. A Report of the Surgeon General*. Atlanta, GA: US 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; 2014

73. Stead LF, Hartmann-Boyce J, Perera R, Lancaster T. Telephone counselling for smoking cessation. *Cochrane Database Syst Rev*. 2013;8(8):CD002850

74. Breslau N, Schultz LR, Johnson EO, Peterson EL, Davis GC. Smoking and the risk of suicidal behavior: a prospective study of a community sample. *Arch Gen Psychiatry*. 2005;62(3):328–334

75. Miller M, Hemenway D, Bell NS, Yore MM, Amoroso PJ. Cigarette smoking and suicide: a prospective study of 300,000 male active-duty Army soldiers. *Am J Epidemiol*. 2000;151(11):1060–1063

76. Li D, Yang X, Ge Z, et al. Cigarette smoking and risk of completed suicide: a meta-analysis of prospective cohort studies. *J Psychiatr Res*. 2012;46(10):1257–1266

77. Goldstein BI, Birmaher B, Axelson DA, et al. Significance of cigarette smoking among youths with bipolar disorder. *Am J Addict*. 2008;17(5):364–371

78. Wong SS, Zhou B, Goebert D, Hishinuma ES. The risk of adolescent suicide across patterns of drug use: a nationally representative study of high school students in the United States from 1999 to 2009. *Soc Psychiatry Psychiatr Epidemiol*. 2013;48(10):1611–1620

79. US Food and Drug Administration. Postmarket reviews. *FDA Drug Safety Newsletter*. 2009;2(1). Available at: http://www.fda.gov/Drugs/DrugSafety/DrugSafetyNewsletter/ucm107311.htm. Accessed July 27, 2015

80. Thomas KH, Martin RM, Davies NM, Metcalfe C, Windmeijer F, Gunnell D. Smoking cessation treatment and risk of depression, suicide, and self harm in the Clinical Practice Research Datalink: prospective cohort study. *BMJ*. 2013;347: f5704

81. Grana R, Benowitz N, Glantz SA. E-cigarettes: a scientific review. *Circulation*. 2014;129(19):1972–1986

82. Bullen C, Howe C, Laugesen M, et al. Electronic cigarettes for smoking cessation: a randomised controlled trial. *Lancet*. 2013;382(9905):1629–1637

83. Dutra LM, Glantz SA. Electronic cigarettes and conventional cigarette use among U.S. adolescents: a cross-sectional study. *JAMA Pediatr*. 2014;168(7):610–617

84. US Food and Drug Administration. FDA Warns of Health Risks Posed by E-Cigarettes. FDA Consumer Health Information July 2009. Available at: http://www.fda.gov/downloads/ForConsumers/ConsumerUpdates/Updates/UCM173430.pdf. Accessed July 27, 2015

85. Goniewicz ML, Knysak J, Gawron M, et al. Levels of selected carcinogens and toxicants in vapour from electronic cigarettes. *Tob Control*. 2014;23(2): 133–139

86. Williams M, Villarreal A, Bozhilov K, Lin S, Talbot P. Metal and silicate particles including nanoparticles are present in electronic cigarette cartomizer fluid and aerosol. *PLoS One*. 2013;8(3): e57987

87. Tierney PA, Karpinski CD, Brown JE, Luo W, Pankow JF. Flavour chemicals in electronic cigarette fluids. *Tob Control*. 2015; Apr 15. Available at: http://tobaccocontrol.bmj.com/content/early/2015/03/27/tobaccocontrol-2014-052175. Accessed July 11, 2015

88. Elliott S. E-cigarette makers' ads echo tobacco's heyday. *New York Times*. August 30, 2013:B1, B5

89. Chatham-Stephens K, Law R, Taylor E, et al; Centers for Disease Control and Prevention (CDC). Notes from the field: calls to poison centers for exposures to electronic cigarettes—United States, September 2010–February 2014. *MMWR Morb Mortal Wkly Rep*. 2014;63(13): 292–293

90. American Association of Poison Control Centers. American Association of Poison Control Centers urges government liquid nicotine regulation in wake of child death. Press Release, December 12, 2014. Available at: http://www.aapcc.org/press/37/. Accessed July 27, 2015

91. Yilmaz G, Caylan N, Karacan CD. Brief intervention to preteens and adolescents to create smoke-free homes and cotinine results: a randomized trial. *J Trop Pediatr*. 2013;59(5):365–371

92. Prokhorov AV, Hudmon KS, Marani SK, et al. Eliminating second-hand smoke from Mexican-American households: outcomes from Project Clean Air-Safe Air (CASA). *Addict Behav*. 2013;38(1): 1485–1492

93. Hymowitz N, Schwab JV. Pediatric residency training director tobacco survey II. *Pediatrics*. 2012;130(4): 712–716

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