

# U.S. Preventive Services Task Force

## Interventions for Tobacco Smoking Cessation in Adults, Including Pregnant Persons: Recommendation Statement

### Summary of Recommendations

The USPSTF recommends that clinicians ask **all adults** about tobacco use, advise them to stop using tobacco, and **provide behavioral interventions and U.S. Food and Drug Administration (FDA)-approved pharmacotherapy** for cessation to nonpregnant adults who use tobacco (*Table 1*). **A recommendation.**

The USPSTF recommends that clinicians ask **all pregnant persons** about tobacco use, advise them to stop using tobacco, and **provide behavioral interventions** for cessation to pregnant persons who use tobacco (*Table 1*). **A recommendation.**

The USPSTF concludes that the current evidence is **insufficient** to assess the balance of benefits and harms of **pharmacotherapy interventions** for tobacco cessation in **pregnant persons** (*Table 1*). **I statement.**

The USPSTF concludes that the current evidence is **insufficient** to assess the balance of benefits and harms of electronic cigarettes (e-cigarettes) for tobacco cessation in adults, including pregnant persons. **The USPSTF recommends that clinicians direct patients who use tobacco to other tobacco cessation interventions with proven effectiveness and established safety** (*Table 1*). **I statement.**

See the Practice Considerations section for more information on recommended behavioral interventions and pharmacotherapy

and for suggestions for practice regarding the **I statements.**

### Introduction

Tobacco use is the leading preventable cause of disease, disability, and death in the United States. In 2014, it was estimated that 480,000 deaths annually are attributed to cigarette smoking, including secondhand smoke.<sup>1</sup> Smoking during pregnancy can increase the risk for miscarriage, congenital anomalies, stillbirth, fetal growth restriction, preterm birth, placental abruption, and complications in the offspring, including sudden infant death syndrome and impaired lung function in childhood.<sup>1-4</sup> In 2019 (the most recent data currently available), an estimated 50.6 million U.S. adults (20.8% of the adult population) used tobacco; 14.0% of the U.S. adult population currently smoked cigarettes; and 4.5% of the U.S. adult population used e-cigarettes.<sup>5</sup> According to data from the National Vital Statistics System, in 2016, 7.2% of women who gave birth smoked cigarettes during pregnancy.<sup>6</sup> There are disparities in smoking behaviors associated with certain sociodemographic factors: Smoking rates are particularly high in non-Hispanic American Indian/Alaska Native persons; lesbian, gay, or bisexual adults; adults whose highest level of educational attainment is a General Educational

**See related Putting Prevention into Practice on page 753.**

**As published** by the USPSTF.

**This summary** is one in a series excerpted from the Recommendation Statements released by the USPSTF. These statements address preventive health services for use in primary care clinical settings, including screening tests, counseling, and preventive medications.

**The complete** version of this statement, including supporting scientific evidence, evidence tables, grading system, members of the USPSTF at the time this recommendation was finalized, and references, is available on the USPSTF website at <https://www.uspreventiveservicestaskforce.org/>.

**This series** is coordinated by Kenny Lin, MD, MPH, deputy editor.

**A collection** of USPSTF recommendation statements published in *AFP* is available at <https://www.aafp.org/afp/uspstf>.

**TABLE 1**

### Interventions for Tobacco Smoking Cessation in Adults, Including Pregnant Persons: Clinical Summary of the USPSTF Recommendation

<b>What does the USPSTF recommend?</b>	Nonpregnant adults: <ul style="list-style-type: none"> <li>Ask about tobacco use.</li> <li>Provide behavioral interventions and pharmacotherapy for cessation to those who use tobacco.</li> </ul> <b>Grade A</b>
	Pregnant persons: <ul style="list-style-type: none"> <li>Ask about tobacco use.</li> <li>Provide behavioral interventions for cessation to those who use tobacco.</li> </ul> <b>Grade A</b>
	Pregnant persons who use tobacco: <ul style="list-style-type: none"> <li>The evidence is insufficient to assess the balance of benefits and harms of pharmacotherapy for tobacco cessation.</li> </ul> <b>I statement</b>
	Adults and pregnant persons who use tobacco: <ul style="list-style-type: none"> <li>The evidence is insufficient to assess the balance of benefits and harms of using e-cigarettes for tobacco cessation. Clinicians should direct patients to other cessation interventions with proven effectiveness and established safety.</li> </ul> <b>I statement</b>
<b>To whom does this recommendation apply?</b>	Adults 18 years or older, including pregnant persons
<b>What's new?</b>	This recommendation is consistent with the 2015 USPSTF recommendation. This recommendation incorporates newer evidence and language in the field of tobacco cessation, including new evidence on the harms of e-cigarettes (i.e., vaping).
<b>How to implement this recommendation?</b>	<ol style="list-style-type: none"> <li>Ask all adults, including pregnant persons, about tobacco use, using methods such as: <ul style="list-style-type: none"> <li>5 A's: Ask, Advise, Assess, Assist, Arrange follow-up</li> <li>Ask, Advise, Refer</li> <li>Vital sign: treat smoking status as a vital sign</li> </ul> </li> <li>Provide cessation interventions to persons who use tobacco <ul style="list-style-type: none"> <li>For nonpregnant adults who use tobacco, provide behavioral counseling and pharmacotherapy for cessation <ul style="list-style-type: none"> <li>Effective behavioral counseling interventions include physician advice, nurse advice, individual counseling, group behavioral interventions, telephone counseling, and mobile phone–based interventions</li> <li>FDA-approved pharmacotherapy for cessation includes nicotine replacement therapy, bupropion sustained-release, and varenicline</li> <li>Combined behavioral counseling and pharmacotherapy includes at least 4 or more behavioral counseling sessions with 90 to 300 minutes of total contact time</li> </ul> </li> <li>For pregnant persons who use tobacco, provide behavioral counseling for cessation <ul style="list-style-type: none"> <li>Effective behavioral counseling includes cognitive behavioral, motivational, and supportive therapies such as counseling, health education, feedback, financial incentives, and social support</li> </ul> </li> </ul> </li> </ol>
<b>What are other relevant USPSTF recommendations?</b>	The USPSTF has made a recommendation on primary care interventions for prevention and cessation of tobacco use in children and adolescents. This recommendation is available at <a href="https://www.uspreventivestaskforce.org">https://www.uspreventivestaskforce.org</a> .
<b>Where to read the full recommendation statement?</b>	Visit the USPSTF website to read the full recommendation statement. This includes more details on the rationale of the recommendation, including benefits and harms, supporting evidence, and recommendations of others.

**Note:** The USPSTF recognizes that clinical decisions involve more considerations than evidence alone. Clinicians should understand the evidence but individualize decision-making to the specific patient or situation.

e-Cigarette = electronic cigarette; FDA = U.S. Food and Drug Administration; USPSTF = U.S. Preventive Services Task Force.

Development certificate; persons who are uninsured and those with Medicaid; adults with a disability; and persons with mild, moderate, or severe generalized anxiety symptoms.<sup>5</sup> According to the 2015 National Health Interview Survey, which reported responses from 33,672 adults, 68% of adults who smoked reported that they wanted to stop smoking, and 55% attempted quitting in the past year<sup>7</sup>; only 7% reported having recently quit smoking, and 31% reported having used cessation counseling, medication, or both when trying to quit.<sup>7</sup>

### USPSTF Assessment of Magnitude of Net Benefit

The USPSTF concludes with high certainty that the net benefit of behavioral interventions and FDA-approved pharmacotherapy for tobacco smoking cessation, alone or combined, in nonpregnant adults who smoke is **substantial**.

The USPSTF concludes with high certainty that the net benefit of behavioral interventions for tobacco smoking cessation on perinatal outcomes and smoking cessation in pregnant persons is **substantial**.

The USPSTF concludes that the evidence on pharmacotherapy interventions for tobacco smoking cessation in pregnant persons is **insufficient** because few studies are available, and the balance of benefits and harms cannot be determined.

The USPSTF concludes that the evidence on the use of e-cigarettes for tobacco smoking cessation in adults, including pregnant persons, is **insufficient**, and the balance of benefits and harms cannot be determined. The USPSTF has identified the lack of well-designed, randomized clinical trials on e-cigarettes that report smoking abstinence or adverse events as a critical gap in the evidence.

See *Table 2* for more information on the USPSTF recommendation rationale and assessment. For more details on the methods the USPSTF uses to determine net benefit, see the USPSTF Procedure Manual.<sup>8</sup>

### Practice Considerations

#### PATIENT POPULATION UNDER CONSIDERATION

This recommendation applies to adults 18 years or older, including pregnant persons. The USPSTF has issued a separate recommendation statement on primary care interventions for the prevention and cessation of tobacco use in children and adolescents.<sup>9</sup>

#### DEFINITIONS

Key definitions related to tobacco use are reported in *Table 3*.<sup>10,11</sup> Although tobacco use refers broadly to the use of any tobacco product, cigarette smoking has historically been the most prevalent form of tobacco use in the United States, and most of the evidence surrounding cessation of tobacco products relates to quitting combustible cigarette

smoking. Thus, the current USPSTF recommendations focus on interventions for tobacco smoking cessation. Additionally, although e-cigarettes are considered a tobacco product that should also be the focus of tobacco prevention and cessation efforts, for this recommendation statement, the evidence on e-cigarettes as a potential cessation aid for cigarette smoking was also evaluated.

#### ASSESSMENT OF TOBACCO USE

All patients should be asked about their tobacco use, whether or not risk factors for use are present, and encouraged to stop using tobacco. When smoking is identified, all patients should be provided interventions to quit smoking. Higher smoking prevalence has been observed in men; persons younger than 65 years; non-Hispanic American Indian/Alaska Native persons; persons who are lesbian, gay, or bisexual; persons whose highest level of educational attainment is a General Educational Development certificate; persons with an annual household income less than \$35,000; persons with a disability; and persons with mild, moderate, or severe anxiety symptoms.<sup>5</sup>

Common approaches for clinicians to assess patients' tobacco use include the following.

- The 5 A's: (1) ask about tobacco use; (2) advise to quit through clear, personalized messages; (3) assess willingness to quit; (4) assist in quitting; and (5) arrange follow-up and support.<sup>12</sup>

- "Ask, Advise, Refer," which encourages clinicians to ask patients about tobacco use, advise them to quit, and refer them to telephone quit lines, other evidence-based cessation interventions, or both.<sup>12</sup>

- Vital sign: Treating smoking status as a vital sign and recording smoking status at every health visit are also frequently used to assess smoking status.<sup>12</sup>

Because many pregnant persons who smoke do not report it, using multiple choice questions to assess smoking status in this group may improve disclosure.<sup>12</sup>

#### INTERVENTIONS FOR TOBACCO CESSATION AND IMPLEMENTATION CONSIDERATIONS

*Nonpregnant Adults.* Effective tobacco smoking cessation interventions for nonpregnant adults include behavioral counseling and pharmacotherapy, either individually or in combination.<sup>13,14</sup>

*Combined Behavioral Counseling Interventions and Pharmacotherapy.* Combining behavioral and pharmacotherapy interventions has been shown to increase tobacco smoking cessation rates compared with either usual care/brief cessation interventions alone or pharmacotherapy alone.<sup>13</sup> Most combination interventions include behavioral counseling involving several sessions ( $\geq 4$ ), with planned total contact time usually ranging from 90 to 300 minutes.<sup>13</sup> The largest effect was found in interventions that provided 8 or more

**TABLE 2****Summary of USPSTF Rationale**

Rationale	Nonpregnant adults	Pregnant persons
Benefits of intervention	<ul style="list-style-type: none"> <li>Convincing evidence that the benefit of behavioral interventions (including physician and nurse advice, individual and group counseling, and telephone and mobile phone-based interventions), alone or combined with pharmacotherapy, to increase achievement of tobacco smoking cessation in nonpregnant adults who smoke is substantial.</li> <li>Convincing evidence that the benefit of pharmacotherapy interventions, including NRT, bupropion hydrochloride SR (bupropion SR), and varenicline—with or without behavioral counseling interventions—to achieve tobacco smoking cessation in nonpregnant adults is substantial.</li> <li>Convincing evidence that using 2 types of NRT (fast-acting plus patch) moderately increases tobacco smoking cessation rates over using 1 type and that addition of NRT to treatment with bupropion SR provides additional benefit over use of bupropion SR alone.</li> <li>Inadequate evidence to determine the effect of e-cigarettes on achievement of tobacco smoking cessation.</li> </ul>	<ul style="list-style-type: none"> <li>Convincing evidence that the benefit of behavioral interventions to achieve tobacco smoking cessation in pregnant persons, and prevent infant low birth weight, is substantial.</li> <li>Inadequate evidence on pharmacotherapy because of few available studies on the benefits of NRT and no studies reporting on the benefits of bupropion SR, varenicline, or e-cigarettes to achieve tobacco smoking cessation in pregnant persons or to improve infant outcomes.</li> </ul>
Harms of intervention	<ul style="list-style-type: none"> <li>Adequate evidence to bound the magnitude of harms of behavioral interventions for tobacco smoking cessation in nonpregnant adults as small to none, based on the nature of the interventions, the low likelihood of serious harms, and the available information from studies reporting few harms. When direct evidence is limited, absent, or restricted to select populations or clinical scenarios, the USPSTF may place conceptual upper or lower bounds on the magnitude of benefit or harms.</li> <li>Adequate evidence that the harms of pharmacotherapy interventions for tobacco smoking cessation in adults with NRT, bupropion SR, or varenicline are small.</li> <li>Harms of NRT include irritation at nicotine exposure site, chest pain, arrhythmia, and minor cardiovascular events such as palpitations and bradycardia.</li> <li>A statistically nonsignificant increase in severe adverse events was found with bupropion SR, but no difference in study withdrawals due to adverse events was seen and no increased risk of cardiovascular events (any or major) was seen with bupropion SR.</li> <li>Use of varenicline was not associated with cardiovascular or neuropsychiatric adverse events but may be associated with an increased risk of general severe adverse events.</li> <li>Inadequate evidence to determine the harms of e-cigarettes as a tobacco smoking cessation tool.</li> </ul>	<ul style="list-style-type: none"> <li>Adequate evidence to bound the magnitude of harms of behavioral interventions for tobacco smoking cessation in pregnant persons who smoke as small to none based on the nature of the intervention, the low likelihood of serious harms, and the available information from studies reporting few harms. When direct evidence is limited, absent, or restricted to select populations or clinical scenarios, the USPSTF may place conceptual upper or lower bounds on the magnitude of benefit or harms.</li> <li>Inadequate evidence on the harms of pharmacotherapy interventions because of few available studies on NRT and no studies reporting on the harms of bupropion SR, varenicline, or e-cigarettes for tobacco smoking cessation in pregnant persons who smoke.</li> </ul>
USPSTF assessment	<ul style="list-style-type: none"> <li>High certainty that the net benefit of behavioral interventions and U.S. Food and Drug Administration-approved pharmacotherapy interventions for tobacco smoking cessation, alone or combined, in nonpregnant adults who smoke is substantial.</li> <li>Insufficient evidence on the use of e-cigarettes for tobacco smoking cessation in adults, and the balance of benefits and harms cannot be determined. There is a critical gap in the evidence due to a lack of well-designed, randomized clinical trials on e-cigarettes for cessation that report smoking abstinence or adverse events.</li> </ul>	<ul style="list-style-type: none"> <li>High certainty that the net benefit of behavioral interventions for tobacco smoking cessation on perinatal outcomes and smoking cessation in pregnant persons is substantial.</li> <li>Insufficient evidence on pharmacotherapy interventions for tobacco smoking cessation in pregnant persons because of a lack of studies, and the balance of benefits and harms cannot be determined.</li> <li>Insufficient evidence on the use of e-cigarettes for tobacco smoking cessation in pregnant persons, and the balance of benefits and harms cannot be determined. Evidence is lacking.</li> </ul>

**Note:** For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, go to <https://www.uspreventiveservicestaskforce.org/>.

e-Cigarettes = electronic cigarettes; NRT = nicotine replacement therapy; SR = sustained release; USPSTF = U.S. Preventive Services Task Force.

sessions, although the difference in effect among the number of sessions was not significant.<sup>13</sup>

**Behavioral Counseling Interventions.** Many behavioral counseling interventions are available to increase tobacco smoking cessation in adults. These interventions can be delivered in the primary care setting or can be referred to community settings with feedback to the primary care clinician. Effective behavioral interventions include physician advice, nurse advice, individual counseling with a cessation specialist, group behavioral interventions, telephone counseling, and mobile phone–based interventions.<sup>13</sup> Behavioral counseling interventions used in studies typically targeted individuals who were motivated to quit tobacco smoking.<sup>13</sup> For additional information about behavioral counseling interventions in nonpregnant adults, see *Table 4*.<sup>12,13,15–45</sup>

**Pharmacotherapy.** The current pharmacotherapy interventions approved by the FDA for the treatment of tobacco smoking dependence in adults are nicotine replacement therapy (NRT; including nicotine transdermal patches, lozenges, gum, inhalers, or nasal spray), bupropion hydrochloride sustained-release, and varenicline.<sup>46</sup> All 3 types of pharmacotherapy increase tobacco smoking cessation rates. Using a combination of NRT products (in particular, combining short-acting plus long-acting forms of NRT) has been found to be more effective than using a single form of NRT.<sup>13</sup> Based on a smaller number of studies, varenicline appears to be more effective than NRT or bupropion sustained-release.<sup>13</sup> Information on dosing regimens is available in the package inserts of individual medications or in the 2020 Surgeon General Report on Smoking Cessation.<sup>47</sup>

**Pregnant Persons. Behavioral counseling interventions.** Providing any psychosocial intervention to pregnant persons who smoke tobacco can increase smoking cessation. The behavioral counseling intervention type most often studied in pregnant persons who smoke was counseling. Behavioral interventions were more effective when they provided more intensive counseling, were augmented with messages and self-help materials tailored for pregnant persons, and included messages about the effects of smoking on both maternal and fetal health and strong advice to quit as soon as possible.<sup>12,13</sup> Although

smoking cessation at any point during pregnancy yields substantial health benefits for the expectant mother and infant, quitting early in pregnancy provides the greatest benefit to the fetus.<sup>12,13</sup> Other interventions included feedback, incentives, health education, and social support, although provision of health education alone, without counseling, was not found to be effective. For additional information about behavioral counseling interventions in pregnant persons, see *Table 4*.<sup>12,13,15–45</sup>

## ADDITIONAL RESOURCES

Primary care clinicians may find the following resources useful in talking with adults and pregnant persons about tobacco smoking cessation.

### Centers for Disease Control and Prevention

- Health care clinician resources for treatment of tobacco use and dependence  
<https://www.cdc.gov/tobaccoHCP>
- Tips from Former Smokers  
<https://www.cdc.gov/tobacco/campaign/tips/partners/health/index.html>

TABLE 3

### Key Definitions Related to Tobacco Use

Tobacco use	<i>Tobacco use</i> refers to use of any tobacco product. As defined by the U.S. Food and Drug Administration, tobacco products include any product made or derived from tobacco intended for human consumption (except products that meet the definition of drugs), including, but not limited to, cigarettes, cigars (including cigarillos and little cigars), dissolvables, hookah tobacco, nicotine gels, pipe tobacco, roll-your-own tobacco, smokeless tobacco products (including dip, snuff, snus, and chewing tobacco), vapes, e-cigarettes, hookah pens, and other electronic nicotine delivery systems. <sup>10</sup>
Smoking	<i>Smoking</i> generally refers to the inhaling and exhaling of smoke produced by combustible tobacco products such as cigarettes, cigars, and pipes.
Vaping	<i>Vaping</i> refers to the inhaling and exhaling of aerosols produced by e-cigarettes. <sup>11</sup> Vaping products (i.e., e-cigarettes) usually contain nicotine, which is the addictive ingredient in tobacco. Substances other than tobacco can also be used to smoke or vape. Although the 2015 USPSTF recommendation statement used the term “electronic nicotine delivery systems” or “ENDS,” the USPSTF recognizes that the field has shifted to using the term “e-cigarettes” (or “e-cigs”) and uses the term e-cigarettes in the current recommendation statement. e-Cigarettes can come in many shapes and sizes, but generally they heat a liquid that contains nicotine (the addictive drug in tobacco) to produce an aerosol (or vapor) that is inhaled (vaped) by users. <sup>11</sup>

**Note:** For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, go to <https://www.upservicestaskforce.org/>.

Supplement. eFigure at US Preventive Services Task Force (USPSTF) Grades and Levels of Evidence

e-Cigarettes = electronic cigarettes; USPSTF = U.S. Preventive Services Task Force.

**TABLE 4****Tobacco Cessation Behavioral Counseling Interventions\***

<b>Intervention type</b>		
	<b>Physician or nurse advice</b>	<b>Individual or group-based counseling</b>
Intervention recipient	Adult smokers motivated to quit	Adult smokers, regardless of motivation to quit
Behavior change goals and techniques	Specific advice varied but generally included a verbal stop smoking message  Most often, advice was given along with print materials, additional advice from health care staff, or a referral to a cessation clinic	Typically included review of smoking history and motivation to quit, help in the identification of high-risk situations and the generation for problem solving strategies, and nonspecific support and encouragement  Many group-based sessions included cognitive behavioral therapy. Initial sessions focused on discussion of motivation for quitting, health benefits, and strategies for planning a quit attempt
Intervention intensity	Often a single session lasting less than 20 minutes (with or without print materials) plus up to 1 follow-up visit between 1 week and 3 months later	Often 1 face-to-face session with follow-up over 1 week to 4 months later  Individual-based counseling given during 1 face-to-face session with multiple follow-up sessions in person or via telephone  Group-based counseling delivered over 6 to 8 sessions
Interventionist	Physicians (e.g., general practitioners, family practice) or nursing staff	Smoking cessation specialists, often with backgrounds in social work, psychology, psychiatry, health education, and nursing
Practice settings	Primary care or hospital settings	Hospital or smoking cessation clinic settings
Examples of interventions and materials used in studies†,‡	Intervention: Morgan, et al., <sup>15</sup> 1996  Material used: <i>Clear Horizons: A Quit Smoking Guide Especially for Those 50 and Over</i> (Orleans, et al., <sup>16</sup> 1989)  Intervention: Canga, et al., <sup>17</sup> 2000  Materials used: Based on <i>How to Help Your Patients Stop Smoking: A National Cancer Institute Manual for Physicians</i> <sup>18</sup> and the orientation of the Mayo Nicotine Dependence Center <sup>19</sup>	Intervention: Weissfeld, et al., <sup>20</sup> 1991  Material used: <i>Clearing the Air: How to Quit Smoking and Quit for Keeps</i> (National Cancer Institute, <sup>21</sup> 1987)  Other interventions:  Fiore, et al., <sup>22</sup> 2004 Glasgow, et al., <sup>23</sup> 2000
Demonstrated benefit§	Increases the rate of smoking cessation at 6 months or more  Physician advice: 1.76 (95% CI, 1.58 to 1.96). Some evidence suggests that providing additional follow-up is more effective  Nurse advice: 1.29 (95% CI, 1.21 to 1.38)	Increases the rate of smoking cessation at 6 months or more  Individual counseling: RR, 1.48 (95% CI, 1.34 to 1.64) Group-based therapy: RR, 1.88 (95% CI, 1.52 to 2.33)

**Note:** For a summary of the evidence systematically reviewed in making this recommendation, the full recommendation statement, and supporting documents, go to <https://www.uspreventiveservicestaskforce.org/>.

RR = risk ratio; USPSTF = U.S. Preventive Services Task Force.

\*—Adapted from Appendix H Table 1 in Patnode, et al., and a modified Template for Intervention Description and Replication (TIDieR) checklist.<sup>13,45</sup>

†—Example interventions are those that demonstrated a positive direction of effect on smoking cessation, were at low risk of bias, and took place in the United States in primary care or a primary care–applicable setting among an unselected sample of adults (i.e., those not selected based on having smoking-related disease or other comorbid conditions). Inclusion of studies and materials is for example purposes only and does not indicate endorsement by the USPSTF.

Telephone and mobile phone-based interventions	Psychosocial intervention in pregnant persons
<ul style="list-style-type: none"> <li>• Adult smokers motivated to quit</li> <li>• Most mobile phone-based interventions targeted adults younger than 45 years</li> </ul>	Pregnant smokers
Telephone counseling and mobile phone-based interventions were generally tailored to participants' smoking history and readiness to quit and focused on increasing motivation and likelihood of quitting	Cognitive behavioral, motivational, and supportive therapies that include counseling, health education, feedback, financial incentives, and social support
<p>Varied from 2 weeks to 1 year, with most taking place over 3 to 4 months</p> <p>Telephone counseling:</p> <ul style="list-style-type: none"> <li>1 to 12 calls</li> <li>10 to 20 minutes per call, although the first calls were often longer</li> </ul> <p>Occurred during scheduled telephone calls that began after smokers had first called a smoking quit line</p> <p>Mobile phone-based:</p> <ul style="list-style-type: none"> <li>Fewer than 2 messages per day every day over the course of the intervention</li> <li>Used text messaging</li> </ul>	<p>Recruited during first prenatal visit or during second-trimester visit and continued through late pregnancy</p> <p>Frequency and intensity varied. Counseling ranged from a single session &lt; 5 minutes to several sessions up to 4 hours per session and has been increasing over time</p>
Telephone counseling provided by professional counselors or trained health care professionals	Varied
Text messages were developed and administered through computer expert-generated systems	
Virtual via telephone or mobile phone; a few studies provided face-to-face support	Women's health clinic or smoking cessation clinic
Intervention: Bock, et al., <sup>24</sup> 2013 Material used: American Lung Association guide (Strecher, et al., <sup>25</sup> 1989)	Intervention: Rigotti, et al., <sup>32</sup> 2006 Material used: Solomon and Quinn, <sup>33</sup> 2004
Intervention: Orleans, et al., <sup>26</sup> 1991 Material used: <i>A Lifetime of Freedom from Smoking</i> (American Lung Association, <sup>27</sup> 1980)	Intervention: Windsor, et al., <sup>34</sup> 2011 Materials used: Ask-Advise-Assess-Arrange SCRIPT, <sup>12,35-37</sup> including a video, <sup>38</sup> guide to quit smoking, <sup>39</sup> and a ≤ 10-minute counseling session <sup>40</sup>
Intervention: McBride, et al., <sup>28</sup> 1999 Material used: <i>Clearing The Air: Quit Smoking Today</i> (National Cancer Institute, 2008 [ <a href="https://www.cancer.gov/publications/patient-education/clearing-the-air">https://www.cancer.gov/publications/patient-education/clearing-the-air</a> ])	Other interventions: Bullock, et al., <sup>41</sup> 2009; Lee, et al., <sup>42</sup> 2015; Pollak, et al., <sup>43</sup> 2013; Stotts, et al., <sup>44</sup> 2009
Other interventions: Curry, et al., <sup>29</sup> 1995; Ellerbeck, et al., <sup>30</sup> 2009; McClure, et al., <sup>31</sup> 2005	
Increases the rate of smoking cessation at 6 months or more Telephone counseling (provided after smoker calls quit line): RR, 1.38 (95% CI, 1.19 to 1.61)	Increases smoking cessation in late pregnancy: RR, 1.35 (95% CI, 1.23 to 1.48)
Telephone counseling (other settings): RR, 1.25 (95% CI, 1.15 to 1.35) Mobile phone-based interventions: RR, 1.54 (95% CI, 1.19 to 2.00)	Interventions more effective when counseling was more intensive, augmented with messages and self-help materials tailored for pregnant women, and included messages about the effects of smoking on both maternal and fetal health with strong advice to quit as soon as possible
Some evidence that interventions were more effective for smokers who were motivated to quit	Health education, without counseling, was not effective

‡—Materials provided for practice include materials or protocols that were noted within the source study and that were able to be located.

§—Demonstrated benefit of intervention type is based on comparison of that intervention type with a given control and should not be used to compare the effectiveness of one intervention type with another.

Information from references 12, 13, and 15-45.

U.S. Department of Health and Human Services

- SmokeFree.Gov Health Professionals Page  
<https://smokefree.gov/help-others-quit/health-professionals>
- SmokeFreeWomen  
<http://women.smokefree.gov/pregnancy-motherhood>

In addition, the following resources may be useful to primary care clinicians and practices trying to implement interventions for tobacco smoking cessation.

- Million Hearts tools for clinicians for tobacco cessation  
<https://millionhearts.hhs.gov/tools-protocols/tools/tobacco-use.html>
- Centers for Disease Control and Prevention state and community resources for tobacco control programs  
<https://www.cdc.gov/tobacco/stateandcommunity>
- U.S. Department of Veterans Affairs Primary Care & Tobacco Cessation Handbook  
[https://www.mentalhealth.va.gov/quit-tobacco/docs/IB\\_10-565-Primary-Care-Smoking-Handbook-PROVIDERS-508.pdf](https://www.mentalhealth.va.gov/quit-tobacco/docs/IB_10-565-Primary-Care-Smoking-Handbook-PROVIDERS-508.pdf)
- World Health Organization's toolkit for delivering brief smoking interventions in primary care  
[http://www.who.int/tobacco/publications/smoking\\_cessation/9789241506953/en/](http://www.who.int/tobacco/publications/smoking_cessation/9789241506953/en/)

In 2020, the Surgeon General issued a Report on Smoking Cessation.<sup>47</sup> The report's findings were largely similar to those of the USPSTF. The Surgeon General's report issued some additional findings regarding internet-based interventions for cessation and describes some suggestive but not sufficient evidence about specific e-cigarette use behaviors and increased cessation. Overall, the Surgeon General's report found that there is inadequate evidence to conclude that e-cigarettes increase smoking cessation. More information on the Surgeon General's Report on Smoking Cessation is available at [https://www.cdc.gov/tobacco/data\\_statistics/sgr/2020-smoking-cessation/#fact-sheets](https://www.cdc.gov/tobacco/data_statistics/sgr/2020-smoking-cessation/#fact-sheets).

### SUGGESTIONS FOR PRACTICE REGARDING THE I STATEMENTS

*Pharmacotherapy for Pregnant Persons.* According to data from the National Vital Statistics System, in 2016, 7.2% of women who gave birth smoked cigarettes during pregnancy,<sup>6</sup> and among 1,071 pregnant women aged 18 to 44 years, 3.6% reported using e-cigarettes.<sup>48</sup> Smoking during pregnancy reduces fetal growth, increases the risk of preterm birth, and doubles the risk for delivering an infant with low birth weight. It also increases the relative risk for stillbirth death by 25% to 50%.<sup>12</sup> Quitting smoking early in pregnancy can reduce or eliminate the adverse effects of smoking on fetal growth.<sup>47</sup> For pregnant persons for whom behavioral counseling alone does not work, evidence to

support other options to increase smoking cessation during pregnancy are limited. Few clinical trials have evaluated the effectiveness of NRT for smoking cessation in pregnant women. Although most studies were in the direction of benefit, no statistically significant increase in cessation was seen.<sup>13</sup> There is limited evidence on harms of NRT from trials in pregnant persons. Potential adverse maternal events reported in studies of NRT include slightly increased diastolic blood pressure and skin reactions to the patch.<sup>13</sup> Potential adverse events reported in nonpregnant adults include higher rates of low-risk cardiovascular events, such as tachycardia.<sup>13</sup> It has been suggested that NRT may be safer than smoking during pregnancy given that cigarette smoke contains harmful substances in addition to nicotine. The USPSTF identified no studies on bupropion sustained-release or varenicline pharmacotherapy for tobacco smoking cessation during pregnancy.

In the absence of clear evidence on the balance of benefits and harms of pharmacotherapy in pregnant women, clinicians are encouraged to consider the severity of tobacco dependence in each patient and engage in shared decision-making to determine the best individual treatment course.

*e-Cigarettes in Nonpregnant Adults and Pregnant Persons.* No tobacco product use is risk-free, including the use of e-cigarettes. Tobacco smoking cessation can be difficult for many individuals; thus, having a variety of tools available to help persons quit smoking would potentially be helpful. Findings from small surveys and qualitative data report mixed findings on whether physicians are recommending e-cigarettes to patients to help them quit smoking.<sup>13,49-51</sup> Few randomized trials have evaluated the effectiveness of e-cigarettes to increase tobacco smoking cessation in nonpregnant adults, and no trials have evaluated e-cigarettes for tobacco smoking cessation in pregnant persons.<sup>13</sup> Overall, results were mixed on whether smoking cessation increased with e-cigarettes; however, continued e-cigarette use after the intervention phase of trials remained high, indicating continued nicotine dependence. Trial evidence on harms of e-cigarettes used for smoking cessation is also limited. The most common adverse effects from e-cigarette use reported in trials included coughing, nausea, throat irritation, and sleep disruption.<sup>13</sup> Generally, no significant difference in short-term serious adverse events associated with e-cigarette use was reported.<sup>13</sup> Evidence on potential harms of e-cigarette use in general (whether for tobacco smoking cessation or not) has been reviewed in the National Academies of Sciences, Engineering, and Medicine report Public Health Consequences of E-Cigarettes.<sup>52</sup> For example, the report found conclusive evidence that in addition to nicotine, most e-cigarette products contain and emit numerous potentially toxic substances. Additionally, an outbreak of e-cigarette, or vaping product, use-associated lung injury that occurred in the

United States in late 2019 also suggests potential harms of e-cigarette use. The vast majority of cases have been associated with tetrahydrocannabinol-containing e-cigarettes.<sup>53</sup>

Given the high rates of e-cigarette use in children and adolescents currently in the United States,<sup>54</sup> the USPSTF recognizes that an overall public health question remains on whether the potential use of e-cigarettes as a tobacco smoking cessation aid (if ever proven effective) could be balanced with the high rates of e-cigarette use in youth as a driver for increasing overall tobacco use. The USPSTF has issued a separate recommendation statement on the prevention of tobacco use, including e-cigarettes, in children and adolescents.<sup>9</sup> The current USPSTF recommendation statement for adults evaluated the evidence on the benefits and harms of e-cigarettes to increase tobacco cessation; the USPSTF found this evidence to be insufficient. Given the proven effectiveness of behavioral counseling interventions in both nonpregnant and pregnant adults, and of pharmacotherapy in nonpregnant adults, the USPSTF recommends that clinicians focus on offering behavioral counseling and pharmacotherapy to increase smoking cessation in nonpregnant adults, and behavioral counseling to increase smoking cessation in pregnant persons.

### OTHER RELATED USPSTF RECOMMENDATIONS

In 2020, the USPSTF recommended that primary care clinicians provide interventions, including education or brief counseling, to prevent the initiation of tobacco use (including e-cigarettes) in school-aged children and adolescents.<sup>9</sup> The USPSTF found the evidence on primary care interventions for the cessation of tobacco use in youth to be insufficient.

**This recommendation** statement was first published in *JAMA*. 2021;325(3):265-279.

The “Update of Previous USPSTF Recommendation,” “Supporting Evidence,” “Research Needs and Gaps,” and “Recommendations of Others” sections of this recommendation statement are available at <https://www.uspreventiveservicestaskforce.org/uspstf/recommendation/tobacco-use-in-adults-and-pregnant-women-counseling-and-interventions>.

The USPSTF recommendations are independent of the U.S. government. They do not represent the views of the Agency for Healthcare Research and Quality, the U.S. Department of Health and Human Services, or the U.S. Public Health Service.

### References

1. National Center for Chronic Disease Prevention and Health Promotion Office on Smoking and Health. The health consequences of smoking—50 years of progress: a report of the Surgeon General; 2014.
2. US Dept 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. Women and smoking: a report of the Surgeon General; 2001.
3. US Dept 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. How tobacco smoke causes disease: the biology and behavioral basis for smoking-attributable disease: a report of the Surgeon General; 2010.
4. World Health Organization. WHO Recommendations for the prevention and management of tobacco use and second-hand smoke exposure in pregnancy; 2013.
5. Cornelius ME, Wang TW, Jamal A, et al. Tobacco product use among adults—United States, 2019. *MMWR Morb Mortal Wkly Rep*. 2020;69(46):1736-1742.
6. Drake P, Driscoll AK, Mathews TJ. Cigarette smoking during pregnancy: United States, 2016. *NCHS Data Brief*. 2018;(305):1-8.
7. Babb S, Malarcher A, Schauer G, et al. Quitting smoking among adults—United States, 2000-2015. *MMWR Morb Mortal Wkly Rep*. 2017;65(52):1457-1464.
8. US Preventive Services Task Force. Procedure manual. Updated 2017. Accessed November 24, 2020. <https://www.uspreventiveservicestaskforce.org/uspstf/procedure-manual>
9. US Preventive Services Task Force. Primary care interventions for prevention and cessation of tobacco use in children and adolescents: US Preventive Services Task Force recommendation statement. *JAMA*. 2020;323(16):1590-1598.
10. U.S. Food and Drug Administration. Products, ingredients & components. Updated May 28, 2020. Accessed November 24, 2020. <https://www.fda.gov/tobacco-products/products-guidance-regulations/products-ingredients-components>
11. Centers for Disease Control and Prevention. About electronic cigarettes (e-cigarettes). Updated November 16, 2020. Accessed November 24, 2020. [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/about-e-cigarettes.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/about-e-cigarettes.html)
12. US Dept of Health and Human Services. Treating tobacco use and dependence: 2008 update; 2008.
13. Patnode CD, Henderson JT, Melnikow J, et al. Interventions for tobacco cessation in adults, including pregnant women: an evidence update for the U.S. Preventive Services Task Force. Evidence synthesis no. 196. AHRQ publication 20-05264-EF-1. Agency for Healthcare Research and Quality; 2021.
14. Patnode CD, Henderson JT, Coppola EL, et al. Interventions for tobacco cessation in adults, including pregnant persons: updated evidence report and systematic review for the US Preventive Services Task Force. *JAMA*. 2021;325(3):280-298.
15. Morgan GD, Noll EL, Orleans CT, et al. Reaching midlife and older smokers: tailored interventions for routine medical care. *Prev Med*. 1996;25(3):346-354.
16. Orleans CT, Rimer BK, Fleisher L. *Clear Horizons: A Quit Smoking Guide Especially for Those 50 and Over*. Fox Chase Cancer Center; 1989.
17. Canga N, De Irala J, Vara E, et al. Intervention study for smoking cessation in diabetic patients: a randomized controlled trial in both clinical and primary care settings. *Diabetes Care*. 2000;23(10):1455-1460.
18. Glynn TJ, Manley MW. *How to Help Your Patients Stop Smoking: A National Cancer Institute Manual for Physicians*. U.S. Dept of Health and Human Services; 1998.
19. Hurt RD, Dale LC, McClain FL, et al. A comprehensive model for the treatment of nicotine dependence in a medical setting. *Med Clin North Am*. 1992;76(2):495-514.
20. Weissfeld JL, Holloway JL. Treatment for cigarette smoking in a Department of Veterans Affairs outpatient clinic. *Arch Intern Med*. 1991;151(5):973-977.
21. *Clearing the Air: How to Quit Smoking and Quit for Keeps*. National Cancer Institute; 1987.
22. Fiore MC, McCarthy DE, Jackson TC, et al. Integrating smoking cessation treatment into primary care: an effectiveness study. *Prev Med*. 2004;38(4):412-420.
23. Glasgow RE, Whitlock EP, Eakin EG, et al. A brief smoking cessation intervention for women in low-income planned parenthood clinics. *Am J Public Health*. 2000;90(5):786-789.
24. Bock B, Heron K, Jennings E, et al. A text message delivered smoking cessation intervention: the initial trial of TXT-2-Quit: randomized controlled trial. *JMIR Mhealth Uhealth*. 2013;1(2):e17.

25. Strecher VJ, Rimer BK, Monaco KD. Development of a new self-help guide—Freedom From Smoking for you and your family. *Health Educ Q*. 1989;16(1):101-112.

26. Orleans CT, Schoenbach VJ, Wagner EH, et al. Self-help quit smoking interventions: effects of self-help materials, social support instructions, and telephone counseling. *J Consult Clin Psychol*. 1991;59(3):439-448.

27. *A Lifetime of Freedom from Smoking*. American Lung Association; 1980.

28. McBride CM, Scholes D, Grothaus LC, et al. Evaluation of a minimal self-help smoking cessation intervention following cervical cancer screening. *Prev Med*. 1999;29(2):133-138.

29. Curry SJ, McBride C, Grothaus LC, et al. A randomized trial of self-help materials, personalized feedback, and telephone counseling with non-volunteer smokers. *J Consult Clin Psychol*. 1995;63(6):1005-1014.

30. Ellerbeck EF, Mahnken JD, Cupertino AP, et al. Effect of varying levels of disease management on smoking cessation: a randomized trial. *Ann Intern Med*. 2009;150(7):437-446.

31. McClure JB, Westbrook E, Curry SJ, et al. Proactive, motivationally enhanced smoking cessation counseling among women with elevated cervical cancer risk. *Nicotine Tob Res*. 2005;7(6):881-889.

32. Rigotti NA, Park ER, Regan S, et al. Efficacy of telephone counseling for pregnant smokers: a randomized controlled trial. *Obstet Gynecol*. 2006;108(1):83-92.

33. Solomon L, Quinn V. Spontaneous quitting: self-initiated smoking cessation in early pregnancy. *Nicotine Tob Res*. 2004;6(suppl 2):S203-S216.

34. Windsor R, Woodby L, Miller T, et al. Effectiveness of Smoking Cessation and Reduction in Pregnancy Treatment (SCRIPT) methods in Medicaid-supported prenatal care: trial III. *Health Educ Behav*. 2011;38(4):412-422.

35. Fiore MB, Bailey WC, Cohen S, et al. Smoking cessation: clinical practice guideline no. 18. Agency for Health Care Policy and Research; 1996.

36. Windsor RA, Cutter G, Morris J, et al. The effectiveness of smoking cessation methods for smokers in public health maternity clinics: a randomized trial. *Am J Public Health*. 1985;75(12):1389-1392.

37. Windsor RA, Lowe JB, Perkins LL, et al. Health education for pregnant smokers: its behavioral impact and cost benefit. *Am J Public Health*. 1993;83(2):201-206.

38. Windsor R, Crawford M, Woodby L. Commit to quit smoking during and after pregnancy. DVD. Society for Public Health Education: 1998; edited 2004.

39. Windsor R. *A Pregnant Woman's Guide to Quit Smoking*. Society for Public Health Education; 2005.

40. Laine C, Davidoff F. Patient-centered medicine. A professional evolution. *JAMA*. 1996;275(2):152-156.

41. Bullock L, Everett KD, Mullen PD, et al. Baby BEEP: a randomized controlled trial of nurses' individualized social support for poor rural pregnant smokers. *Matern Child Health J*. 2009;13(3):395-406.

42. Lee M, Miller SM, Wen K-Y, et al. Cognitive-behavioral intervention to promote smoking cessation for pregnant and postpartum inner city women. *J Behav Med*. 2015;38(6):932-943.

43. Pollak KI, Lyra P, Bilheimer A, et al. A pilot study testing SMS text delivered scheduled gradual reduction to pregnant smokers. *Nicotine Tob Res*. 2013;15(10):1773-1776.

44. Stotts AL, Groff JY, Velasquez MM, et al. Ultrasound feedback and motivational interviewing targeting smoking cessation in the second and third trimesters of pregnancy. *Nicotine Tob Res*. 2009;11(8):961-968.

45. Hoffmann TC, Glasziou PP, Boutron I, et al. Better reporting of interventions: template for intervention description and replication (TIDieR) checklist and guide. *BMJ*. 2014;348:g1687.

46. U.S. Food and Drug Administration. Want to quit smoking? FDA-approved products can help. Updated December 12, 2017. Accessed November 24, 2020. <https://www.fda.gov/consumers/consumer-updates/want-quit-smoking-fda-approved-products-can-help>

47. 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. Smoking cessation. A report of the Surgeon General; 2020.

48. Liu B, Xu G, Rong S, et al. National estimates of e-cigarette use among pregnant and nonpregnant women of reproductive age in the United States, 2014-2017. *JAMA Pediatr*. 2019;173(6):600-602.

49. Kandra KL, Ranney LM, Lee JGL, et al. Physicians' attitudes and use of e-cigarettes as cessation devices, North Carolina, 2013. *PLoS One*. 2014;9(7):e103462.

50. Ofei-Dodoo S, Kellerman R, Nilsen K, et al. Family physicians' perceptions of electronic cigarettes in tobacco use counseling. *J Am Board Fam Med*. 2017;30(4):448-459.

51. Nickels AS, Warner DO, Jenkins SM, et al. Beliefs, practices, and self-efficacy of US physicians regarding smoking cessation and electronic cigarettes: a national survey. *Nicotine Tob Res*. 2017;19(2):197-207.

52. National Academies of Sciences, Engineering, and Medicine. *Public Health Consequences of E-Cigarettes*. National Academies Press; 2018.

53. Centers for Disease Control and Prevention. Outbreak of lung injury associated with the use of e-cigarette, or vaping, products. Updated February 25, 2020. Accessed November 24, 2020. [https://www.cdc.gov/tobacco/basic\\_information/e-cigarettes/severe-lung-disease.html](https://www.cdc.gov/tobacco/basic_information/e-cigarettes/severe-lung-disease.html)

54. Wang TW, Gentzke AS, Creamer MR, et al. Tobacco product use and associated factors among middle and high school students—United States, 2019. *MMWR Surveill Summ*. 2019;68(12):1-22.