KAISER PERMANENTE

Tobacco and Nicotine Cessation Guideline

Last guideline approval: July 2020

Guidelines are systematically developed statements to assist patients and providers in choosing appropriate health care for specific clinical conditions. While guidelines are useful aids to assist providers in determining appropriate practices for many patients with specific clinical problems or prevention issues, guidelines are not meant to replace the clinical judgment of the individual provider or establish a standard of care. The recommendations contained in the guidelines may not be appropriate for use in all circumstances. The inclusion of a recommendation in a guideline does not imply coverage. A decision to adopt any particular recommendation must be made by the provider in light of the circumstances presented by the individual patient.

Major Changes as of July 2020

- The guideline scope has been expanded to include interventions for e-cigarette cessation.
- A new section discusses current evidence on switching to e-cigarettes from conventional cigarettes as a potential harm reduction intervention.
- Information on nicotine cessation medications has been updated, including revised recommendations on combination therapies.
- Recommendations for pregnant women have been added.
- Resources for digital interventions, including apps, websites, and texting support, have been expanded.

Terminology note: Throughout this guideline, ***e-cigarette*** refers to any type of electronic nicotine delivery system (ENDS).

Screening and Prevention of Tobacco and Nicotine Use

Screening for use of tobacco and nicotine products is standard work at Kaiser Permanente Washington. All patients aged 10 years or older must have tobacco/nicotine product history documented in KP HealthConnect. The screening question "Have you ever used tobacco or nicotine products (cigarettes, e-cigarettes, chew, vaping device)?" is included on the Well Visit Questionnaires for ages 10 and older. All patients, including pregnant women, should be asked about tobacco/nicotine use at every visit. (For adults who have never smoked, less frequent screening may be considered, but at a minimum should be done at all Well Visits.) The 2020 U.S. Surgeon General's Report found that virtually all adult smokers first tried cigarettes before the age of 18.

The USPSTF 2020 recommends that primary care clinicians provide interventions, including education or brief counseling, **to prevent initiation of tobacco use among school-aged children and adolescents** (Grade B recommendation). See Appendix 1, p. 16, for prevention talking points to use in conversations with adolescents.

Screening for Lung Cancer

Patients who are current cigarette smokers (regardless of their readiness to quit) or who have quit within the past 15 years should be assessed to determine whether they are eligible for lung cancer screening. See the KPWA Lung Cancer Screening Guideline for more information.

As of March 2022, lung cancer screening with low-dose computed tomography (LDCT) is recommended for patients who meet **all** of the following criteria:

- Are ages 50 through 79,
- Have at least a 20-year pack history,
- Currently smoke or quit less than 15 years ago, **and**
- Have no significant comorbidities that would preclude surgical treatment or limit life expectancy.

While screening with LDCT can prevent some lung cancer deaths, it is important to emphasize to patients that the single most effective way to reduce lung cancer risk is smoking cessation. For every year patients don't smoke, their risk for lung cancer goes down.

Interventions

All users of tobacco and/or nicotine products (such as e-cigarettes) should be strongly encouraged to quit. The goal is sustained cessation of all tobacco and/or nicotine products.

A note about e-cigarettes
The current evidence on the harms, benefits, and interventions for cessation of e-cigarettes is sparse and of low quality. Accordingly, there is a lack of data on the effectiveness of smoking cessation medications and behavioral interventions for e-cigarettes. However, because nicotine addiction is the underlying reason that patients continue to use both traditional cigarettes and e-cigarettes, and high-quality studies on the effectiveness of both behavioral and pharmacologic interventions for smoking cessation are ubiquitous, **it is reasonable to consider using smoking cessation interventions for e-cigarettes.**

For more information about prevalence, harms, and interventions, as well as e-cigarettes as a cessation aid, see Key Points Comparison: E-Cigarettes and Conventional Tobacco, p. 8.

Recommended Interventions by Population

Table 1. Recommended interventions for tobacco and/or e-cigarette cessation

Population	Behavioral interventions[1]	Medication therapy [2]	
		NRT (patch, gum, lozenge) [3]	Varenicline or bupropion [4]
Adults (USPSTF 2015)	Yes	Yes	Yes
Teens [5] (USPSTF 2020)	Yes	Consider	Consider
Pregnant women (USPSTF 2015)	Yes	No	No

1. Behavioral interventions include phone counseling (e.g., Quit For Life®), digital interventions (web-based, mobile app programs, and text-based message programs), and print self-help materials.
2. Medication therapy is most effective when combined with behavioral interventions.
3. The combination of two forms of NRT is more effective than a single form of NRT.
4. The combination of varenicline or bupropion with NRT is more effective than monotherapy with any of these medications.
5. Intervention recommendations in this guideline apply to adolescents aged 13-18 years. For younger patients who are using tobacco or e-cigarettes, consider consultation with Mental Health and Wellness.

Stages of readiness

Ask current tobacco and/or e-cigarette users if they are ready to make a quit attempt now.

- **Ready now:** Develop a quit plan with the patient that includes behavioral interventions, education, and medications as appropriate. Use .AVSTOBACCOREADY
- **Not ready but interested:** Provide education and information about behavioral interventions (including referral to Quit For Life). Consider offering nicotine replacement therapy if patient is willing to reduce nicotine consumption prior to attempting cessation. Nicotine abstinence is not required before starting NRT. Use .AVSTOBACCONOTREADY
- **Not ready and not interested:** Continue screening standard work at future visits and provide encouragement to choose a quit date at every visit. Use .AVSTOBACCONOTREADY

See Appendix 2 (p. 17) for talking points to use in conversations with adults and teens at each stage of readiness.

Behavioral Intervention Options

The following behavioral intervention recommendations apply to adults, teens, and pregnant individuals.

Telephone-based counseling programs

Quit For Life®

Quit For Life is a comprehensive tobacco cessation program **for adolescents and adults aged 13 years and over.** Kaiser Permanente members are eligible to participate in the program at no cost. Quit For Life provides individual telephone counseling sessions with coaches who screen participants for medication appropriateness, contraindications, or precautions; make initial dosing recommendations; and provide follow-up and support for medication use. Participants can also access the program coaches online. *Note:* Quit For Life coaches do not make recommendations for tobacco cessation aids for participants aged 13–17. If adolescent members ask about NRT or medications, the coach advises them to talk with their primary care provider.

Patients can enroll in Quit For Life in whatever way works for them:

- Call 1-800-462-5327
- Visit the program website: quitnow.net/KPWA
- Download the Quit For Life app

Providers can also use the Quit For Life e-referral in KP HealthConnect to enroll their patients.

Washington State Quitline

The Washington State Quit Line (operated by Optum) provides tailored telephone-based support, self-help material, and medications (when available and appropriate). Specially trained quit coaches work one-on-one to help patients identify barriers to quitting, overcome urges, and create a quit plan. Enrollment is available to qualifying callers once per 12-month period. This program is available for adults and adolescents. Dedicated phone lines are also available in Spanish, Chinese, Korean, and Vietnamese, with a link to an interpreter service to translate into 240 other languages. For more information, see https://www.doh.wa.gov/YouandYourFamily/Tobacco/HowtoQuit/Counseling.

Patients and caregivers can also get online information and resources, including apps and text messaging support, to help with quitting at http://www.quitline.com or by calling 1-800-QUIT-NOW (1-800-784-8669). The Washington State Quitline recently launched a Live Vape Free course designed for parents and caregivers (aged 18+) to help start the conversation with teens about vaping; the course includes video, interactive activities, a toolkit, and live chat or e-mail with coaches.

Websites and apps

Websites and apps	Adults	Teens
Nicotine Anonymous 1-877-TRY-NICA (1-877-879-6422) Group support – telephone, online, in-person	x	
MyStrength app (under KPWA Resources for Emotional Wellness; requires log-in) http://kp.org/wa/mhw	x	x
Free online smoking cessation program (American Lung Assoc.) 1-800-LUNGUSA (1-800-586-4872)	x	x
Tips from Former Smokers® (CDC)	x	x
How to Quit (CDC)	x	x
Youth Tobacco Prevention (CDC)		x
Fact Sheet on Youth and Tobacco Use (CDC)		x

Think E-Cigs Can't Harm Teens' Health? (FDA)	x
Become a Smokefree Teen (National Cancer Institute)	x
E-Cigarette Use Among Youth and Young Adults (U.S. Surgeon General)	x
Preventing Tobacco Use Among Youth and Young Adults (U.S. Surgeon General)	x

Medication Options

Medication treatment should be offered to current, non-pregnant nicotine users who are motivated and ready to quit, and who smoke more than one-half pack per day or use e-cigarettes regularly.

Behavioral therapy should be offered in conjunction with medication treatment.

A note about medications and teens
All nicotine cessation medications are **off-label for teens** due to insufficient evidence. Because the benefits of nicotine cessation outweigh the possible harms of medications, consider offering medication treatments to teens who smoke 10 or more cigarettes per day or use e-cigarettes regularly. Because many teens who use nicotine smoke fewer than 10 cigarettes per day or are occasional users of e-cigarettes, shared decision-making is recommended prior to prescribing NRT to avoid inadvertently increasing the amount of nicotine consumed.

Smoking cessation products fall under the Affordable Care Act (ACA) requirements for preventive services and **most** plans cover preventive medications in full. Preventive benefit coverage under the pharmacy benefit **does not have age limitations** for prescribed NRT, varenicline, or bupropion.

Three types of medication are recommended for nicotine cessation, alone or in various combinations.

- **Nicotine replacement therapy** (NRT) is both prescription and over-the-counter medication that treats physical dependence on nicotine. NRT can help relieve withdrawal symptoms without exposing people to the thousands of chemicals found in cigarettes.

  Recommended forms of NRT are patches, gum, and lozenges. (Inhaler and nasal spray forms of NRT may have more adverse effects and are less affordable compared to recommended NRT options).

- **Varenicline** is a prescription medication that works by interfering with nicotine receptors in the brain. It reduces nicotine withdrawal symptoms, including cravings, while also blocking the effects of nicotine on nicotine receptors, thereby diminishing the rewarding effects of cigarettes.

- **Bupropion** is a prescription medication that decreases cravings and other nicotine withdrawal symptoms. It also has some nicotine receptor blocking activity, which may diminish the rewarding effects of cigarettes.

- **Combinations**

  - **Varenicline *or* bupropion + NRT** is recommended, as it is more effective than any of these medications as monotherapy.
  - **Varenicline + bupropion** may also be considered, as moderate evidence suggests that the combination is more effective than varenicline alone (Zhong 2019).

Evidence suggests that each of these medications is equally effective but that all have different therapeutic and side effects, so shared decision-making is recommended to choose the medication combination that may work best for each patient (see Table 2).

Table 2. Considerations for selecting nicotine cessation medication

NRT Two forms taken concurrently (patch/gum or patch/lozenge) are more effective than a single form.		
Benefits Better adherence than varenicline or bupropion.	**Side effects/contraindications** Do not use if recent heart attack, irregular heartbeat, or chest pain. Avoid NRT patch if eczema, rash, or other skin condition. Avoid NRT gum if jaw problems such as temporomandibular joint disease.	**Monitoring** Test heart rate and blood pressure periodically. Discontinue NRT in any form if signs of nicotine toxicity: severe headache, dizziness, mental confusion, disturbed hearing and vision, abdominal pain, excessive salivation, nausea, vomiting, diarrhea, cold sweat, weakness, or rapid, weak, and irregular pulse. Discontinue NRT patch if rash develops. Consider discontinuing NRT patch if symptoms of myalgia, arthralgia, abnormal dreams, insomnia, nervousness, dry mouth, or sweating.
Bupropion		
Benefits Because bupropion is an antidepressant, it may be the preferred choice for patients with concurrent depression.	**Side effects/contraindications** FDA black box warning about an increased risk of suicide when initiating therapy for teens and young adults. Do not use if at risk for seizures or if have history of bulimia/anorexia nervosa. Common side effects include dry mouth, insomnia, and restlessness.	**Monitoring** Follow-up is recommended 2–4 weeks after starting bupropion for changes in behavior, agitation, depressed mood, and suicidal ideation. Patients with use precautions may need more frequent follow-up.
Varenicline		
Benefits Achieves slightly higher abstinence rates than bupropion or NRT.	**Side effects/contraindications** Do not use in patients with a history of serious hypersensitivity or skin reactions to varenicline. Common side effects include nausea, sleep disturbances, constipation, flatulence and vomiting.	**Monitoring** Follow-up is recommended 2–4 weeks after starting varenicline for changes in behavior, agitation, depressed mood, and suicidal ideation. Patients with use precautions may need more intensive follow-up.

Medication dosing

Table 3. Dosing for nicotine cessation medications
Note: These medications may be prescribed for e-cigarette users as well as smokers. Use clinical judgement for NRT dosing.

Medication	Initial dose	Maximum dose
Nicotine transdermal patch	***Tapering schedule***	
	> 10 cigarettes per day	
	Weeks 1–4: 21 mg patch per day Weeks 5–6 14 mg patch per day Weeks 7–8: 7 mg patch per day	—
	≤ 10 cigarettes per day	
	Weeks 1–6: 14 mg patch per day Weeks 6–8: 7 mg patch per day	—
Nicotine gum	***Tapering schedule***	
	Time from waking to first cigarette: **≤ 30 minutes**: Use **4 mg** piece. **> 30 minutes:** Use **2 mg** piece.	
	Weeks 1–6: 1 piece every 1–2 hours (at least 9 per day) Weeks 7–9: 1 piece every 2–4 hours Weeks 10–12: 1 piece every 4–8 hours	Up to 24 pieces per day
Nicotine lozenge	***Tapering schedule***	
	Time from waking to first cigarette: **≤ 30 minutes**: Use **4 mg** lozenge. **> 30 minutes:** Use **2 mg** lozenge.	
	Weeks 1–6: 1 lozenge every 1–2 hours (at least 9 per day) Weeks 7–9: 1 lozenge every 2–4 hours Weeks 10–12: 1 lozenge every 4–8 hours	5 lozenges every 6 hours; up to 20 lozenges per day
Bupropion sustained release (SR) [1]	Begin 1–2 weeks before the quit date. Day 1–3: 150 mg once daily Day 4 through week 12: 150 mg twice daily	300 mg per day
Varenicline [1]	Begin 1 week before the quit date. Day 1–3: 0.5 mg once daily Day 4–7: 0.5 mg twice daily Day 8 through week 12: 1 mg twice daily	1 mg twice daily

1. Reassess at 12 weeks to determine if continuation of therapy is appropriate (i.e., benefit is greater than risk).

Key Points Comparison: E-Cigarettes and Conventional Tobacco

	E-cigarettes	Conventional tobacco products
Prevalence: Adults	In 2018, 4.5% of adults (18+) were e-cigarette users. Almost 90% of adult e-cigarette users are current or former cigarette smokers.	In 2018, 13.7% of adults in the U.S. were cigarette smokers (down from 21% in 2005).
Prevalence: Teens	In 2019, 27.5% of high school students reported they had used e-cigarettes in the past 30 days (up from 1.5% in 2011).	In 2019, 5.8% of high school students reported they had smoked cigarettes in the past 30 days (down from 15.8% in 2011).
Harms	• There are no long-term studies on the safety of e-cigarettes and limited evidence on short-term harms. • There is moderate evidence that e-cigarette use leads to subsequent traditional cigarette smoking in teens and young adults. • Nicotine exposure during adolescence can cause addiction and harm the developing brain. • E-cigarette aerosol contains harmful substances such as heavy metals, carcinogens, volatile organic compounds, ultrafine particles, and toxic flavorings, such as diacetyl. • **Based on what is currently known about harms, we recommend cessation for all e-cigarette users.**	• Tobacco use is the leading preventable cause of disease, disability, and death in the U.S. • Smoking increases the risk for all-cause mortality, cancer, respiratory disease, cardiovascular disease, and diabetes, and harms nearly every organ in the body. • **Based on strong evidence (USPSTF Grade A), cessation is strongly recommended for all current tobacco users.**
Interventions for cessation	• Evidence is limited on behavioral and pharmacologic interventions for e-cigarette cessation. • Due to the likelihood that the benefits outweigh the harms, we recommend behavioral interventions for e-cigarette cessation for all e-cigarette users. • Pharmacologic interventions are recommended for e-cigarette cessation for adults. • Smoking cessation medications are off-label for adolescents, but may be considered for adolescents who are ready to quit. • Pharmacologic interventions are not recommended for pregnant women.	• There is strong evidence for behavioral and pharmacological interventions for smoking cessation in adults (USPSTF Grade A). • A combination of both behavioral and pharmacological interventions is preferred. • Despite insufficient evidence, it is recommended that behavioral interventions (especially apps and other digital interventions) be offered to adolescents and pregnant women, due to the likelihood that benefits outweigh harms. • Off-label use of smoking cessation medications may also be considered for adolescents who are motivated to quit. • Pharmacologic interventions are not recommended for pregnant women. • **There is insufficient evidence to recommend e-cigarettes for harm reduction or as an intervention for smoking cessation.** See following section.

E-cigarettes for harm reduction or smoking cessation

- Use of e-cigarettes is not FDA-approved for harm reduction.
- Too little is known about long-term effects to recommend e-cigarettes as an alternative to smoking, although low-quality evidence suggests potential for harm reduction (e.g., decreased COPD symptoms).
- Some organizations (such as the UK National Health Society) recommend switching from conventional tobacco products to e-cigarettes in limited circumstances.
- The USPSTF concluded that there is insufficient evidence to recommend use of e-cigarettes for tobacco cessation in adults (USPSTF Grade I).

Evidence Summary

The Tobacco and Nicotine Cessation Guideline was developed using an evidence-based process, including systematic literature search, critical appraisal, and evidence synthesis.

As part of our improvement process, the Kaiser Permanente Washington guideline team is working towards developing new clinical guidelines and updating the current guidelines every 2–3 years. To achieve this goal, we are adapting evidence-based recommendations from high-quality national and international external guidelines, if available and appropriate. The external guidelines should meet several quality standards to be considered for adaptation. They must: be developed by a multidisciplinary team with no or minimal conflicts of interest; be evidence-based; address a population that is reasonably similar to our population; and be transparent about the frequency of updates and the date the current version was completed.

In addition to identifying the recently published guidelines that meet the above standards, a literature search was conducted to identify studies relevant to the key questions that are not addressed by the external guidelines.

A supplementary literature search and evidence review was conducted in May 2020; two new studies published after the November 2019 evidence review had an impact on the guideline recommendations.

Conclusion from November 2019 review	Updated conclusion from May 2020 review
There is insufficient evidence to assess the effectiveness of e-cigarettes as aid for smoking cessation during pregnancy.	Low evidence shows that e-cigarettes are not associated with smoking cessation in pregnant women.
Evidence is limited for varenicline combined with bupropion versus varenicline monotherapy, but favors combination varenicline with bupropion.	There is moderate evidence suggesting that the combination of varenicline and bupropion is more effective than varenicline alone.

External guidelines eligible for adapting

American College of Cardiology 2018
Barua RS, Rigotti NA, Benowitz NL, et al. 2018 ACC Expert Consensus Decision Pathway on Tobacco Cessation Treatment: A Report of the American College of Cardiology Task Force on Clinical Expert Consensus Documents. *J Am Coll Cardiol*. 2018;72(25):3332-3365.

American College of Preventive Medicine 2018
Livingston CJ, Freeman RJ, Costales VC, et al. Electronic Nicotine Delivery Systems or E-cigarettes: American College of Preventive Medicine's Practice Statement. *Am J Prev Med*. 2019;56(1):167-178. doi:10.1016/j.amepre.2018.09.010

National Academies of Sciences, Engineering, and Medicine 2018
National Academies of Sciences, Engineering, and Medicine. 2018. *Public health consequences of e-cigarettes.* Washington, DC: The National Academies Press. doi: https://doi.org/10.17226/24952.

National Comprehensive Cancer Network 2016
Shields PG, Herbst RS, Arenberg D, et al. Smoking Cessation, Version 1.2016, NCCN Clinical Practice Guidelines in Oncology. *J Natl Compr Canc Netw*. 2016;14(11):1430-1468. doi:10.6004/jnccn.2016.0152

USPSTF 2020
U.S. Preventive Services Task Force, Owens DK, Davidson KW, et al. 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. doi:10.1001/jama.2020.4679

USPSTF 2015
Siu AL; U.S. Preventive Services Task Force. Behavioral and Pharmacotherapy Interventions for Tobacco Smoking Cessation in Adults, Including Pregnant Women: U.S. Preventive Services Task Force Recommendation Statement. *Ann Intern Med*. 2015;163(8):622-634. doi:10.7326/M15-2023

Key questions from the KPWA review

Question 1. What is the safety and effectiveness of e-cigarettes as an aid for smoking cessation in current smokers (adolescents, adults, pregnant women)?

Adults
Five systematic reviews with meta-analysis (Gentry 2019, Glasser 2017, Hartmann-Boyce 2016, Malas 2016, Khoudigian 2016) were reviewed. Studies with different designs were included in the reviews. The most predominant designs were longitudinal, cohort, and cross-sectional. Few randomized controlled trials (RCTs) were included. Studies compared electronic nicotine delivery systems (ENDS) versus e-cigarette placebo or nicotine replacement therapy (NRT), or no aid. The studies included first- and second-generation e-cigarettes. Patients were followed for at least 6 months. The findings indicated that ENDS may be effective in terms of smoking cessation, but the overall strength of evidence is very low to low. While no serious adverse events were reported, the most common adverse events included mouth and throat irritation, nausea, and headaches. However, no long-term adverse events were reported. Several non-RCTs and RCTs that assessed e-cigarettes versus different comparators reported mixed results. One of the main limitations of these studies was short follow-up. In the absence of long-term findings, the balance of benefits and harms is unclear.

Adolescents
There is insufficient evidence to assess the effectiveness of e-cigarettes as an aid to smoking cessation among adolescents. However, a systematic review and meta-analysis (Soneji 2017) showed an association between e-cigarette use and subsequent cigarette smoking initiation among adolescents and young adults.

Pregnant women
A study on pregnant women (Chiang 2019), a secondary analysis of a national sample of pregnant smokers, reports that use of e-cigarettes is not associated with improved smoking cessation. Based on this study, the conclusion on pregnant women is now: e-cigarettes are not associated with smoking cessation in pregnant women. The quality of the study is low.

Question 2. What is the safety and effectiveness of medications as an aid for e-cigarette cessation in current adult smokers?

There is insufficient evidence to assess the effectiveness of smoking cessation medications as an aid to e-cigarette cessation.

Question 3. Does stopping the use of e-cigarettes reduce morbidity or mortality in adults and pregnant women?

No studies that addressed this topic were identified in the literature search.

Question 4. Which treatment/interventions are most effective at increasing tobacco abstinence in adults and pregnant women who currently use tobacco? Which types/specific components of behavioral interventions are effective?

Medications
Several studies, including RCTs and systematic reviews and meta-analyses, were reviewed. Participants were adult smokers who received behavioral interventions in addition to medications alone or in combination. Patients were followed for up to 1 year. Participants were from the general population; however, patients with comorbidities such as CVD and mental illness were included in some of the studies.

> **NRT**: The evidence consists of six studies. Two studies were meta-analyses, three were RCTs, and one was a secondary analysis. A network meta-analysis (Suissa 2017) compared the treatments to each other and indicated that the evidence is insufficient to determine superiority of one medication over another (varenicline, bupropion, NRT). One RCT (Anthenelli 2016) conducted prior to the meta-analysis indicated that varenicline achieved higher abstinence rates at 9–12 weeks than placebo (OR 3.61; 95% CI, 3.07–4,24), nicotine patch (OR 1.68; 95% CI, 1.46–1.93), and bupropion (OR 1.75; 95% CI, 1.52–2.01). In addition, combined NRT was more effective than NRT at 10 weeks. However, an RCT (Baker 2016) reported no significant difference in smoking cessation at 26 weeks between

varenicline, nicotine patch, and combination NRT (nicotine patch + nicotine lozenge). A systematic review and meta-analysis (Hartmann-Boyce 2018) reported that all the licensed forms of NRT (gum, transdermal patch, nasal spray, inhalator, and sublingual tablets/lozenges) led to smoking cessation (RR 1.55; 95% CI 1.49–1.61). NRTs increased the rate of quitting by 50-60% irrespective of setting. In pregnant women, NRT resulted in abstinence close to delivery time (RR 1.32; 95% CI, 1.04–1.69).

Varenicline: The evidence consists of nine studies. A network meta-analysis (Suissa 2017) compared the therapies to each other. The evidence is insufficient to determine superiority of one medication over another (varenicline, bupropion, NRT). The same study reported that varenicline (RR 2.64; 95% CI, 1.34–5.21) and bupropion (RR 1.42; 95% CI, 1.01–2.01) were associated with higher abstinence than placebo in patients with CVD (follow-up 12 months). Patients had personalized counseling. Other studies conducted in and after 2017 reported that varenicline was significantly more effective than placebo (OR 2.5; 95% CI, 1.0–6.1; p = 0.041); varenicline was more effective than nicotine patch in terms of smoking cessation at 3 months in smokers with substance use disorders; and varenicline was probably more effective for abstinence than bupropion, NRT, and placebo. Studies conducted before 2017 showed that varenicline may achieve higher abstinence rates than placebo, nicotine patch, or bupropion. In addition, combined NRT was more effective than NRT at 10 weeks.

Bupropion: A network meta-analysis (Suissa 2017) compared the therapies to each other. The evidence is insufficient to determine superiority of one medication over another (varenicline, bupropion, NRT). However, the same study indicated that bupropion was more effective than placebo and that bupropion versus NRT led to inconclusive findings. Studies conducted before and after 2017 showed that varenicline may be more effective than bupropion (Anthenelli 2016).

Combination therapies: A meta-analysis reported (Windle 2016) the following:

- NRT + NRT versus NRT monotherapy: Finding favored NRT + NRT (OR 1.63; 95% credible interval [CrI], 1.06–3.03). NRT + NRT included nicotine patch with short-acting NRT (gum, inhaler, nasal spray, mouth spray). NRT monotherapy included either the nicotine patch or the short-acting NRT alone.
- Bupropion + NRT monotherapy versus bupropion monotherapy/NRT monotherapy: Finding favored combination of bupropion with NRT monotherapy. However, the difference was slight (OR 1.23; 95% CI, 0.52–2.84). More studies are needed to confirm this finding.
- Varenicline + nicotine patch versus varenicline + placebo: Evidence is limited and conflicting.
- Varenicline combined with bupropion versus varenicline monotherapy: Evidence is limited**.**

Overall, moderate-quality evidence suggests varenicline achieves higher abstinence rates than bupropion, NRT, and placebo. However, a network meta-analysis indicates that there is insufficient evidence to determine superiority of one medication over another. Low- to moderate-quality evidence indicates that a combination of NRT (nicotine patch with either gum, inhaler, nasal spray, or mouth spray) is more effective than NRT monotherapy (either NRT or the short-acting NRT), and that bupropion + NRT monotherapy is slightly more effective than bupropion monotherapy/NRT monotherapy. Moderate-quality evidence indicates that varenicline, bupropion, and NRT are well tolerated. There is moderate evidence suggesting that the combination of varenicline and bupropion is more effective than varenicline alone in terms of smoking cessation (Zhong 2019).

Behavioral interventions

Moderate evidence indicates that behavioral interventions may be effective in smoking cessation. Behavioral interventions include telephone counseling, self-help materials, digital health interventions, individual behavioral counseling, and group behavioral therapy.

Pregnancy

Moderate- to high-quality evidence suggests that psychosocial interventions increase smoking cessation in late pregnancy and reduce the proportion of infants with low birthweight. Counseling, incentive-based interventions, and feedback are effective. Uncertainty remains for health education and social support. The effects of counseling, health education, or social support as one component of a broader intervention are not clear.

Question 5. Which treatments/interventions are most effective at increasing e-cigarette abstinence in adults and pregnant women who are e-cigarette smokers? Which behavioral interventions are effective?

There is a lack of studies.

Question 6. Which, if any, tobacco cessation interventions are effective at promoting abstinence among children and adolescent smokers?

The USPSTF draft recommendation of June 2019 should be adopted: The USPSTF concludes that the current evidence is insufficient to assess the balance of benefits and harms of primary care–feasible interventions for the cessation of tobacco use among school-aged children and adolescents (Grade I). The USPSTF recommends that primary care clinicians provide interventions, including education or brief counseling, to prevent initiation of tobacco use among school-aged children and adolescents (Grade B).

Question 7. Which, if any, interventions are effective at promoting abstinence from e-cigarettes among children and adolescent e-cigarette users?

There is a lack of studies.

References

Anthenelli RM, Benowitz NL, West R, et al. Neuropsychiatric safety and efficacy of varenicline, bupropion, and nicotine patch in smokers with and without psychiatric disorders (EAGLES): a double-blind, randomised, placebo-controlled clinical trial. *Lancet.* 2016 Jun 18;387(10037):2507-2520. doi:10.1016/s0140-6736(16)30272-0

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Guideline Development Process and Team

Development process

The Tobacco and Nicotine Cessation Guideline was developed using an evidence-based process, including systematic literature search, critical appraisal, and evidence synthesis. For details, see Evidence Summary and References.

This edition of the guideline was approved for publication by the Guideline Oversight Group in July 2020.

Team

The Tobacco and Nicotine Cessation Guideline development team included representatives from the following specialties: adolescent medicine, family medicine, medical support services, pharmacy, and preventive care.

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Appendix 1. Talking Points for Prevention Counseling in Adolescents

General tobacco and nicotine use

(Source: www.cdc.gov/tobacco/data_statistics/sgr/2012/pdfs/physician_card508.pdf)

Ask your teen patients what they know about tobacco/nicotine use and health, and help them fill in the gaps. Key points include:

- Teens are more susceptible to nicotine addiction than adults. While fewer than one out of five high school students smoke, nearly four out of five who do smoke continue into adulthood, even if they plan to quit after a few years.
- As a group, teen smokers are no thinner than their non-smoking peers.
- It's much easier to say "no" in the first place than to quit later.

E-cigarettes and other vaping devices

- All tobacco products, even the smokeless ones, contain nicotine and can cause addiction.
- Because e-cigarettes are unregulated, their contents vary widely. In some cases, the products contain materials not included on the label. Some samples contain carcinogens and toxic chemicals such as diethylene glycol—an ingredient in antifreeze.
- Reports of **accidental poisonings** through exposure to the liquid nicotine, particularly among children, have soared in the past several years as e-cigs have become more popular.

Hookahs

- Although hookah smoke might have reduced nicotine levels compared to cigarettes, it has higher levels of many carcinogens, including arsenic and lead. Hookah smoke contains high levels of toxic agents known to:
    - Cause cancer or the lung, bladder, stomach, and mouth,
    - Clog arteries,
    - Cause heart disease,
    - Reduce lung function, and
    - Decrease fertility.
- Tobacco-containing shisha delivers the addictive drug nicotine, and the more frequently it is smoked the more likely it is to cause addiction.
- Sharing the mouthpiece of a hookah places the user at risk for infections like herpes and hepatitis A.
- A typical 1-hour hookah session consists of 200 puffs compared to fewer than 20 puffs in an average cigarette, and the amount of smoke inhaled is well over 100 times greater (90,000 mL compared to 600 mL). Because water pipe use also leads to deeper and longer inhalation of tobacco, hookah users may actually absorb more of the toxic substances than cigarette smokers.

Smokeless tobacco

Smokeless tobacco, including snus, is known to:

- Cause cancer of the mouth, esophagus and pancreas, and tooth decay and oral lesions
- Contain addictive nicotine
- Increase your likelihood of becoming a cigarette smoker.

Appendix 2. Talking Points for Counseling Interventions: All Patients

Arrange for follow-up contacts, either in person or via telephone. The first two follow-ups are recommended within 1 week and 1 month of the quit date, respectively. Relapse is most common in the first 1–2 weeks after quitting.

The former tobacco/nicotine user should receive repeated congratulations on any success (even if only brief) and strong encouragement to remain abstinent or make a new quit attempt, if necessary. Relapse remains common within the first year of cessation.

For recent quitters, use open-ended questions relevant to the topics below:

- The benefits, including potential health benefits that derive from cessation.
- Any success the patient has had in quitting (duration of abstinence, reduction in withdrawal, etc.).
- The problems encountered and dangers to maintaining abstinence.
- A medication check-in, including adherence and side effects.

Recognize danger situations that increase the risk of relapse:

- Depression
- Being around other smokers
- Drinking alcohol
- Experiencing urges
- Time pressure
- Life stressors

Provide basic information about smoking and successful quitting:

- Tobacco/nicotine use is addictive.
- Withdrawal symptoms include negative mood, urges to smoke, and difficulty concentrating.
- Withdrawal typically peaks within 1–3 weeks after quitting.
- Any smoking (even a single puff) increases the likelihood of full relapse.
- Use of pharmacotherapies can reduce withdrawal symptoms. See “Pharmacologic options,” p. __.
- Odds of successful quitting are significantly increased with combination use of medication and counseling compared to either counseling or medication alone (Stead 2012).

Former tobacco/nicotine users with lapses

Goal

Encourage another quit attempt or a recommitment to total abstinence.

Counseling interventions

- Suggest continued use of medications, which can reduce the likelihood that a lapse will lead to a full relapse.
- Reassure the patient that quitting may take multiple attempts, and use the lapse as a learning experience.
- Refer the patient to the Quit For Life Program.

All current tobacco/nicotine users

Goal

Quit all tobacco/nicotine use.

Counseling interventions

Urge every tobacco/nicotine user to quit in a clear, strong, and personalized manner.

- "As your clinician, I need you to know that quitting is the most important thing you can do to protect your health now and in the future. The clinic staff and I will help you."

- Tie use to the patient's current health or illness, social and economic costs, impacts on children, pets, and others in the household.

Assess the patient's readiness to attempt to quit using tobacco/nicotine. Ask, "Are you willing to make a quit attempt within the next 30 days?"

- If **yes,** see "Tobacco/nicotine users who are ready to quit," below.
- If **no,** acknowledge the patient's choice, let the patient know that effective treatments are available when they are ready to quit, and follow up at subsequent visits.

Strategies for engaging patients and enhancing their motivation to quit can include:

- Encouraging them to indicate why quitting is personally relevant, being as specific as possible.
- Asking them to identify potential benefits of stopping tobacco use.
- Using a "readiness ruler." Patients can be asked the following questions at every engagement visit:

  On a scale from 0 to 10:

  1. How IMPORTANT do you feel it would be to change your tobacco use?
  2. How CONFIDENT do you feel that you can change your tobacco use?

Ask follow-up questions about the patient's self-rating. Asking, "Why not a higher number?" gives the patient an opportunity to explore and articulate current **barriers** to quitting tobacco, while "Why not a lower number?" can elicit the patient's **motivations** to change or their self-efficacy. The actual number patients assign themselves is not important, but the discussion that follows can help increase a smoker's readiness to quit.

Current tobacco/nicotine users who are ready to quit

Goals

Develop a quit plan with the patient. Discuss smoking cessation programs, clinic-based counseling (Primary Care or Adolescent Center), web- or mobile phone–based interventions, drug treatment, and follow-up.

Help patients with a quit plan by instructing them to:

- Set a quit date. Ideally, the quit date should be within 2 weeks.
- Tell family, friends, and coworkers about quitting and request their understanding and support.
- Anticipate challenges to planned quit attempt, particularly during the critical first few weeks. These include nicotine withdrawal symptoms.
- Remove tobacco products from their environment. Prior to quitting, avoid smoking in places where they spend a lot of time (e.g., work, home, car).

Provide practical counseling by addressing:

- Abstinence. Total abstinence is essential, including "not even a single puff after the quit date."
- Past quit experiences. Review past quit attempts, including identification of what helped during the quit attempt and what factors contributed to relapse.
- Potential triggers or challenges in the upcoming attempt. Discuss challenges/triggers and how the patient will successfully overcome them.
- Alcohol use. Because alcohol can cause tobacco relapse, the patient should consider limiting/abstaining from alcohol while quitting.
- Other smokers in the household. Quitting is more difficult when there is another smoker in the household. Patients should encourage housemates to quit with them or not smoke in their presence.