



**ADOLESCENT HEALTH AND RECOVERY
TREATMENT & TRAINING (AHARTT)**

Adolescent Smoking Cessation Medication Guide for Parents

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Introduction

Parenting an adolescent can be difficult. Your teenager is more independent now and with that independence may come experimentation with drugs and alcohol.

This guide is designed for parents of adolescents who are using tobacco products. Your challenge as the parent of a smoker is to do everything in your power to help them quit. We will review the medications that have been clinically researched in teenage smokers so that you can make a well-informed decision about them.

This guide does not replace your physician's advice. It is important to partner with your physician to develop an individualized treatment plan specific to your teenager's unique needs.

What is Tobacco Use Disorder?

The nicotine in tobacco can lead to a powerful addiction with numerous health consequences.^{1,2} Researchers believe that youth are at a higher risk for nicotine addiction than adults who start smoking. Many teenagers report that they enjoy smoking now but will never be smoking when they are older. However, research suggests that three out of every four high school smokers will continue to smoke into adulthood.³ If your teen has been diagnosed with Attention-Deficit/Hyperactivity Disorder (ADHD) or Conduct Disorder they are at an even higher risk for trying tobacco products. Having a family member who smokes also increases your teenager's risk of problematic tobacco use.³

Tobacco Use Disorder (TUD) is the medical term used to describe the problematic tobacco use that can occur in daily smokers. Symptoms of TUD can include craving tobacco several hours after it was last used. Withdrawal symptoms can occur within a day of stopping tobacco use and include an irritable, angry or depressed mood, anxiety, restlessness, trouble sleeping and an increased appetite. Your teenager may continue to use tobacco despite having arguments with friends and family about it. They may also stop participating in activities like sports because of their ongoing tobacco use. Other symptoms of TUD include developing a tolerance to the effects of tobacco such as no longer becoming nauseated or dizzy after smoking a cigarette. Your teen may start to smoke a cigarette shortly after waking in the morning.³

Why is it important to quit?

You may have a long list of reasons why you want your teenager to quit smoking. Perhaps you are a smoker and don't want your teenager to suffer the same health problems you have experienced. You may know that smoking remains the number one cause of preventable death in the United States. The Center for Disease Control estimates that 5.6 million youth will die of a smoking-related disease.⁴ Cancers, heart disease, stroke and lung diseases are all linked to smoking. You want your child to live a long and healthy life and cigarettes are a major threat to their well-being.

Non-Medication Treatments for Tobacco Use Disorder

There are a number of treatment options available for adolescent smokers that do not involve the use of medication. These therapies should be utilized as the primary form of treatment for your teen's TUD. These interventions can be combined with one another and with medication treatment.

What is CBT?

Cognitive Behavioral Therapy (CBT) is a type of therapy that has been used to effectively treat a variety of mental health problems including adolescent substance abuse. It is a structured therapy with about 16 sessions. A CBT therapist works with a client to identify specific treatment goals. There is an emphasis on developing the skills needed to reach those goals while problem-solving barriers that emerge along the way. Clients will learn to identify the relationship between their thinking patterns, emotions and behaviors.

CBT has been used to treat adolescent smoking cessation and can be delivered individually or in a group setting. Adolescents are asked to complete homework between sessions. Teens will learn to monitor their use of tobacco products, identify their environmental triggers to smoke, thoughts and feelings that occurred before smoking and the positive and negative consequences of their use. Teens are also taught how to identify nicotine cravings, rate the intensity of the craving and then cope with it.

Teens are also encouraged to participate in positive, social activities. The more time that your teenager spends in activities like volunteer work, sports teams, gainful employment or artistic outlets, the less likely they will be to use harmful substances.

What is Motivational Interviewing?

Motivational Interviewing (MI) is a therapeutic approach used to help people change a behavior. Therapists take a non-judgmental and collaborative approach when working with your teen. The MI strategy focuses on a teenager's mixed thoughts and feelings about smoking cessation. The overall goal is to help an adolescent start to talk about and then commit to smoking cessation.⁵ Adolescents will start to verbalize their own reasons for pursuing a smoke-free life. MI can be incorporated into the other behavioral therapies described here or be provided as a stand-alone treatment.

What is Contingency Management?

Contingency management is an effective strategy to promote a healthy behavior and has been used in the treatment of substance abuse. A voucher or a cash reward may be given to an adolescent who attends a therapy session or who demonstrates abstinence with a negative drug test.⁶ For a teenager working toward smoking cessation, a carbon monoxide (CO) breath monitor or urine sample testing for a nicotine metabolite may be used.

Each time there is a negative test, the adolescent gets a chance to draw from a bowl with rewards of varying monetary value. From week to week, the number of chances to earn that reward increases as long as there is consecutive attendance at appointments and negative drug screens. If a teenager has a positive drug screen or has an unexcused absence their prize draw returns to one.

What is Smoking Cessation Counseling?

Smoking cessation counseling can be provided by your teen's primary care provider during an office visit and may include the Five A's described below⁷:

1. Ask about smoking
2. Advise discontinuation of tobacco use
3. Assess how motivated the youth is to stop smoking and use motivational interviewing techniques to enhance motivation to quit
4. Assist teens in determining a quit date and provide information about possible roadblocks including nicotine withdrawal symptoms
5. Arrange for a return visit to ask about smoking status after the quit date

The Five R's are strategies that may be used during the course of smoking cessation counseling to further motivate a teen to stop smoking.

1. Relevance – Your teen may be asked to come up with their own reasons to stop smoking
2. Risks – Your teen will be provided with specific reasons why smoking is unhealthy for them
3. Rewards – Your teen may be asked to think about how smoking cessation could be beneficial to them
4. Roadblocks – Possible barriers to success will be discussed
5. Repeat – Future appointments may include reminders about the relevance, risks, rewards and roadblocks

Medication Treatments for Tobacco Use Disorder

There are a number of factors to consider when considering the use of a medication to help your teen quit smoking including efficacy, side effects, cost and ease of use. Keep in mind that there are no FDA-approved medications for adolescent smoking cessation.

Medications for Adults with TUD

The treatment of tobacco use disorder in adults is most effective when a medication for TUD is combined with a behavioral treatment. The US Food and Drug Administration (FDA) has approved seven medications for the purpose of smoking cessation in adults. Those medications include Nicotine Replacement Therapies (NRT) delivered in the form of a patch, inhaler, lozenge, gum or nasal spray, as well as bupropion sustained-release (SR) and varenicline.⁷

Clinical trials of NRT, bupropion SR and varenicline in adolescent smokers are starting to emerge^{8,9} but have lagged behind studies in adult smokers. For example, there are

more than 150 clinical studies including 50,000 adult smokers using NRT for smoking cessation¹⁰ compared to just 5 studies of NRT in 728 adolescent smokers.⁸

Nicotine Replacement Therapy

Nicotine Replacement Therapy (NRT) comes in different forms including a patch, gum, inhaler, lozenge and nasal spray. The patch slowly delivers nicotine throughout the day while the other therapies are used multiple times per day. NRT can help ease the nicotine withdrawal symptoms that can occur when tobacco products are stopped. NRT can also help reduce cravings. The large body of evidence regarding NRT in adult smokers has demonstrated that these products can increase the chances of smoking cessation by 50-70%.¹⁰

Since NRT has been repeatedly shown to help adults stop smoking, you might be wondering if it could help your teen smoker. There are only a few studies of NRT in youth. You will see that some of these studies showed a benefit while others did not.

Nicotine Patch and Gum

Study #1: Up first is a trial comparing the nicotine patch and a placebo patch in 100 smokers ages 13-19.¹¹ As in most of the studies we will discuss, the youth participated in behavioral treatments in addition to either the active medication or placebo. Adolescents in this study participated in CBT and CM. Abstinence was measured at the end of the study using a breathalyzer test. The nicotine patch was not found to improve tobacco cessation but it did lower withdrawal and craving symptoms.

Study #2: 120 adolescents participated in a study of the nicotine patch, nicotine gum and placebo over 12 weeks.¹² The participants were also provided a group CBT treatment. The nicotine patch, but not the gum, significantly improved smoking cessation during the study.

Studies #3 and 4: Researchers in The Netherlands studied 257 adolescent smokers assigned to use a nicotine or placebo patch for up to 9 weeks of treatment.¹³ Teens who used the patch consistently had improved success in smoking cessation at the end of treatment. The nicotine patch treatment did not improve smoking cessation at 6 or 12 months after the treatment had ended.¹⁴

Nasal Spray

Study #5: The nicotine nasal spray was studied for 12 weeks in 40 adolescents who also participated in counseling. None of the youth in the nasal spray group stopped smoking. 57% of the participants stopped using the spray after just 1 week. Unpleasant side effects from the spray included burning sensation in the nose and changes in sense of smell and taste.¹⁵

NRT Efficacy

The only form of NRT that has been shown to have any benefit to adolescent smokers is the nicotine patch. The patch may be helpful to some adolescent smokers but relapse after treatment is common. The nicotine patch was tolerated well in the limited number of studies conducted in teens.

Using the Nicotine Patch

Dose: The 21 mg dose of the nicotine patch was used in adolescents smoking 15 or more cigarettes per day. After a few weeks, the nicotine patch dose was decreased to 14 mg and then down to 7 mg. The treatment lasted 6 to 12 weeks. Teen smokers using less than 15 cigarettes per day started with the 14 mg patch.

Side Effects: The nicotine patch should not be used while pregnant or breast-feeding. Possible side effects to the patch can include increased heart rate, increased blood pressure and reactions to the adhesive in the patch. The patches are used for 24 hours but if sleep is disrupted the patch can be removed before bed and replaced the next morning.

Cost: Nicotine patches are available over the counter and cost per patch ranges from approximately \$1.06 to \$2.78. A 6 to 12 week course of daily nicotine patch use ranges from \$45 to \$233 (www.goodrx.com).

Bupropion SR

Bupropion SR is FDA-approved for smoking cessation in adults but not adolescents. It is however, approved for use in youth to treat depression and ADHD. We will discuss 3 studies investigating the use of bupropion for smoking cessation in adolescents.

Study #6: The initial study included 211 adolescent smokers who received treatment with bupropion SR 150 mg or placebo in addition to the nicotine patch and group skills training. There was no improvement in smoking cessation with bupropion SR at 8 weeks or 6 months after the treatment.¹⁶

Study #7: The next study investigated a high and low dose of bupropion SR (300 mg and 150 mg) and compared it to placebo.¹⁷ The adolescent smokers also participated in 6 weeks of weekly counseling sessions. The high dose bupropion SR adolescent subjects had more success with smoking cessation. Six months after treatment, 14% of the bupropion SR 300 mg group versus 3% of the 150 mg group and 10% of the placebo group were abstinent by breath test.

Study #8: The success of bupropion SR 300 mg dosing led researchers to try and boost its benefit by coupling it with contingency management (CM).¹⁸ Youth were provided with weekly individual counseling and medicine appointments over 6 weeks. The group receiving bupropion SR 300 mg and CM had the highest abstinence rates confirmed by urine drug test at the end of the study (27%). Unfortunately, 6 weeks after the study ended the abstinence rates of all participants dropped.

Bupropion SR Efficacy

There is evidence that bupropion SR at the 300 mg daily dose can help adolescents quit smoking in the short-term. Smoking cessation may be further improved when added to a behavioral intervention such as contingency management.

Using Bupropion SR

Bupropion SR is not FDA-approved for use in adolescents for smoking cessation but it is approved for use to treat adolescent depression as well as ADHD.

Warnings: Bupropion SR should not be used if an individual has a seizure disorder or eating disorder. It should not be used within 14 days of use of an MAOI medication. There is a Black Box Warning on the use of bupropion due to concerns related to increased risk of suicidality in youth and serious psychiatric symptoms in patients using it for smoking cessation. It is important to talk with your child's physician about these risks when considering bupropion SR.

Dose: Bupropion SR may be started at 150 mg daily and increased to 150 mg twice daily (8 hours apart) after 3 days.

Side Effects: The most common side effects include headache, dry mouth, nausea, dizziness, constipation, insomnia, sore throat, anxiety, agitation, abdominal pain, ringing in the ears, tremor, palpitations, muscle aches, sweating, rash and decreased appetite.

Cost: A thirty-day supply of bupropion SR 300 mg daily dosing is approximately \$74 to \$92 (www.goodrx.com).

Varenicline

Varenicline is the final medication that is FDA-approved for smoking cessation in adults and has only recently been studied in adolescents.

Study #9: Varenicline was compared to bupropion XL 300 mg in 29 teens during an 8-week study.¹⁹ The participants also received weekly counseling sessions. There was no difference in abstinence at the end of the study between the two medications. Breath test found 27% of the varenicline group and 14% of the bupropion XL group abstinent from smoking.

Varenicline Efficacy

It is too early to tell if varenicline is an effective smoking cessation medication for adolescents. As additional studies are published this guide will be updated. There is a Black Box warning on varenicline regarding serious psychiatric symptoms as well as

suicidality. The possible risks of the medicine do not appear to outweigh a proven benefit in teens.

Summary

The number of studies on medications for adolescent smoking cessation is limited. Behavioral treatments for adolescent smoking cessation are the main treatment recommended for teen smokers at this time. If smoking persists, it may be helpful to consider the use of a nicotine patch or bupropion SR after discussing options with your teen's physician.

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