



# What Families Need to Know to Help Protect Children, Teens and Young Adults

# Introduction

Vaping has become one of the most popular forms of substance use among young people, despite growing evidence of its health risks and harms. Vaping is the act of inhaling and exhaling the aerosol produced when using an electronic vapor device. Typically, the ingredients include nicotine, flavorings and other chemicals, many of which are toxic. Some vaping products contain marijuana or other drugs.

According to the U.S. Centers for Disease Control and Prevention (CDC), 27.5% of high school students and 10.5% of middle school students in 2019 reported using a vaping product (also known as an electronic or e-cigarette) in the past 30 days. These numbers represent a 32% increase among high school students and a staggering 114% increase among middle school students since just the year before, despite growing awareness about the dangers of vaping.

As parents and caregivers, we want to do all that we can to protect our children from the negative effects that vaping can have on a young person’s developing brain. Whether a child has not yet tried vaping, has already begun to vape or vapes regularly, this guide can help you. We break down what vaping is, why it appeals to youth, what the health risks are and what you can do to protect young people from its harms.

## What Is in This Guide?

What is Vaping?.....	3
What do vaping devices look like? .....	3
What is being vaped? .....	3
What is vaping’s appeal?.....	4
What are the Health Effects of Vaping? .....	5
Marijuana and Vaping .....	8
EVALI - Vaping-Related Lung Injuries .....	9
What Parents Should Know and Do.....	10
What are the signs of vaping? .....	10
What can parents do to safeguard against vaping? .....	11
What to do if your child is vaping .....	12
What are the signs of EVALI and how should parents respond? .....	13

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**More than 1 in 4**  
high school  
students reported  
vaping in the  
past month.

CDC’s National Youth Tobacco  
Survey, 2019

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Teen using a JUUL

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## What is Vaping?

Vaping is the act of inhaling and exhaling the aerosol that is produced by an electronic vapor device when it heats up its liquid ingredients. Because of the rise in popularity of JUUL, currently the most popular brand of vaping device, many teens and young adults use the term “JUULING” (pronounced Jewelring), instead of vaping, when referring to the use of these products. More formally, these products are sometimes referred to as electronic cigarettes, or e-cigarettes. Less formally, some simply call them “vapes.” The contents of most vaping liquids (e-liquids) include nicotine, flavoring chemicals and other chemicals. Some vaping products contain (or are modified to contain) marijuana or THC, the psychoactive ingredient in marijuana.

## What do vaping devices look like?

Vaping products, or vapes, come in many shapes and designs. Original devices intentionally looked like cigarettes, cigars or pipes so that they would feel familiar and appealing to smokers. Larger devices, known as tank systems or “mods,” do not look like cigarettes or other tobacco products but can be customized or modified by the consumer to have different flavors, nicotine doses or temperature limits. Today, vapes are small and discreet and resemble modern technology products, such as USB sticks/flash drives or cell phones, and other everyday objects like a pen, eraser or lipstick. Some are disposable while others can be reused by charging the device in the USB port of a computer or outlet charger and by replacing the e-liquid, either by filling the chamber or by using a replacement pre-filled pod or cartridge.

## What is being vaped?

Although many substances can be vaped, teens and young adults most commonly vape flavored e-liquids with nicotine or marijuana (THC).

**Thousands of flavoring chemicals.** Vapes come in thousands of tasty, unmistakably child-friendly flavors, many with fun and enticing names. The flavors mask the harsh taste of nicotine and other chemicals contained in the e-liquid, making it easier to inhale the aerosol. Sweet, fun flavors like gummy bear and cotton candy often remind teens of happy childhood experiences, making them feel harmless. Recent crackdowns on flavors by federal, state and local governments have begun to shift the landscape of preferred vaping products among youth. Now that flavors, aside from menthol and tobacco, are generally banned in pod-based or closed-system devices like JUUL, [loopholes](#)

Vaping is illegal for anyone under the age of 21, according to federal law and many state and local laws. The 21-age limit applies to all tobacco-nicotine products and to all marijuana products in states where marijuana is legal.



Some vaping devices look like regular cigarettes, cigars or pipes, while others resemble USB sticks, guitar picks, small cellphones, lipstick, watches or other everyday items and tech devices.

[in the regulations](#) are driving kids to flavored disposable vapes that have even higher nicotine content and come in countless enticing flavors.

**High levels of nicotine.** Nicotine doses can range from 2mg/ml to more than 59mg/ml, and some companies are engaging in “a nicotine arms race,” trying to raise the dose to levels that exceed those found in regular cigarettes or competing vapes. Currently, one of the most popular vapes, JUUL, contains 59mg/ml of nicotine in each pod in the United States – an amount equal to about 1-2 packs of cigarettes.

**Other chemicals, metals and ultrafine particles.** The aerosol, which many teens believe is harmless water vapor, actually consists of many chemicals, heavy metals and fine particles – many of which are toxic and dangerous – and seep deep into the lungs and bloodstream when vaping.

**Marijuana or other drugs.** Increasingly, marijuana ingredients are found in vapes, including THC (the psychoactive compound in marijuana that creates a sense of being high), the leaf form of marijuana, or CBD. Vapes are sometimes used to inhale other drugs, as well.

## What is vaping’s appeal?

Most vapes are discreet, easy to hide and generally seen as cool and relatively harmless. They come in thousands of tasty flavors that help cover the harsh taste of the chemicals and override the sense that these products might be harmful. They also produce a brief positive sensation or ‘head rush’ that some people like.

Most also have very high doses of nicotine, which can rapidly make those who vape develop an addiction or become dependent on the product. Some young people are also drawn to the “vape tricks” and “cloud competitions,” where they form cloud-like shapes or patterns when exhaling the vape’s aerosol. These tricks are usually performed with modifiable devices, or ‘mod’ style vapes. People will breathe aerosol deep into their lungs and then exhale it through their ears, eyes or nose.

**Teens say they vape for many reasons.** Curiosity is one, and peer pressure is another. They see friends or family members vaping and they are drawn to the appealing flavors. For others, it’s to do vape tricks. Some also say they do it because they feel it is less harmful than other tobacco products and it’s also discreet.



Vaping tricks, such as “The Dragon,” shown above, are another major attraction of vaping.

# What are the Health Effects of Vaping?

It is now [widely recognized](#) that vaping is unhealthy and dangerous, even if it might not be quite as unhealthy and dangerous as smoking traditional, combustible cigarettes.

The more immediate health effects include coughing and wheezing, behavioral and mood changes, headaches, seizures, vomiting and potential severe lung injury. Vaping also negatively affects teens' attention, learning, and impulse control in a way that can harm them in school, sports and social situations.

Nearly all vapes contain nicotine, one of the most addictive substances, and in many cases as much as or more than in traditional cigarettes. Nicotine negatively affects the cardiovascular system (increasing heart rate and blood pressure and the risk of heart attack and stroke), respiratory/lung functioning (including inflammation, asthma and wheezing) and reproductive organs. People who vape can quickly become addicted and are at increased risk of starting to smoke cigarettes or use other addictive products. Taking in high doses of nicotine can lead to nicotine toxicity, which in severe cases can give rise to seizures as well as nausea, vomiting, diarrhea, excessive salivation, dizziness, respiratory failure, coma and paralysis.

The other ingredients in vapes, including the flavorings, are harmful as well. Most contain cancer-causing and other toxic chemicals, heavy metals and tiny particles that go deep into the lungs and cause lung damage, cell damage and reduced ability to fight off infections.

## Exposure to Nicotine

Nicotine is a stimulant that makes the nervous system prepare the body for physical and mental activity. It causes breathing to become more rapid and shallow, as well as increases heart rate and blood pressure. Nicotine exposure from vaping varies considerably depending upon the contents of the e-liquid, the type of device used and how it is used.

Vaping exposes young people to nicotine at a time when the human brain is most at risk for addiction. Because the brain continues to develop until early adulthood, roughly age 25-30, use of any addictive substance prior to these years is especially risky. Young people who vape are affected more intensely than are adults by nicotine.

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## Exposure to toxic chemicals and other harmful ingredients

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Vapes contain a number of chemicals, metals and ultrafine particles that are poisonous when they are heated to form an aerosol and then inhaled. Because of their chemical makeup, certain popular flavors – such as cinnamon, vanilla, butter and mint – are especially harmful. Although some of the flavoring chemicals have been deemed safe when eating or drinking, once they are heated to produce an aerosol, they form additional harmful compounds that have been found to cause lung damage. There also is evidence that some metals and other components of vapes can seep into the e-liquid and enter the lungs during the heating and inhalation process, causing lung damage ranging from mild to severe.

## Addiction

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Nicotine is a highly addictive substance. People who vape can quickly become addicted to the nicotine that is in nearly all vapes, and are at increased risk of starting to smoke cigarettes or use other addictive substances. When a person stops vaping, even for a short period, they can experience withdrawal including strong cravings, irritability, fatigue, headache, sleeplessness and difficulty concentrating. These symptoms can be quite intense, driving them right back to the nicotine product, even when they want to quit. In fact, many people who are able to stop smoking cigarettes by switching to vaping find it extremely difficult to quit vaping due to the very high doses of nicotine and the ease of consuming it through vapes.

## Cigarette smoking

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Teens and young adults who vape are significantly more likely than those who do not vape – [about four times as likely](#) – to end up smoking traditional cigarettes. This is true of young people who never smoked cigarettes and had no intention of, likelihood of or interest in doing so. Strong and consistent research also shows that vaping is not a safe or reliable way to quit smoking. For many people, vaping can actually [make it more difficult to quit smoking](#).

## Multiple tobacco product use

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Young people who vape [have five times the likelihood](#) of those who do not vape to use tobacco products such as cigarettes, hookah, cigars or pipes. The



Many people who are able to stop smoking cigarettes by switching to vaping find it **extremely difficult to quit vaping due to the very high doses of nicotine** and the ease of consuming it through vapes.



majority of people who vape to help them quit smoking end up becoming ‘dual users,’ smoking in places and situations where they can and vaping in places and situations where smoking is impossible. Dual users, therefore, actually take in more nicotine and other potentially toxic chemicals than people who only vape or only use other tobacco products.

## Injuries and poisonings

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Vaping devices, especially those with poor quality batteries that have been stored improperly or have been modified by the user, can malfunction or explode. This results in burns and other injuries. Young people exposed to e-liquids through the mouth, eye or skin contact can experience nicotine poisoning, resulting in vomiting, seizures, brain injury or death.

## Cardiovascular, respiratory, reproductive and immunity effects

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More and more, nicotine and other chemicals in vapes are being tied to increasing heart rate and blood pressure and the risk of heart attack and stroke, as well as inflammation, asthma and wheezing. They also can cause inflammatory processes and depress immune function in lungs, and are associated with chronic bronchitis and reduced ability to fight off bacterial and viral infections, including [COVID-19](#).

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# Marijuana and Vaping

The practice of using vaping devices to consume marijuana or cannabis products is becoming increasingly widespread. Recent data show that many youth who vape, especially older teens, are not just vaping nicotine. Many are vaping THC, the psychoactive ingredient in marijuana that produces a high. [National data from 2019](#) show that 21% of 12th graders, 19% of 10th graders and 7% of 8th graders reported vaping marijuana in the past year, each a significant increase over the previous year. [Other national data](#) show that 15% of middle and high school students, and 43% of those who ever used vapes, have vaped marijuana.

Different from most plant-based marijuana, the level of THC in marijuana vapes can be far higher. Therefore, vaped marijuana tends to be much more potent than smoked marijuana.

Some marijuana vapes look like nicotine vaping devices (e.g., PAX brand, which resembles JUUL products); come in loose leaf, concentrate or extract forms; are available in youth-friendly flavors and names; and are virtually odorless. The THC inhaled when vaping enters the bloodstream quickly and can lead to overuse, addiction and other negative health consequences. Vaping marijuana can cause bloodshot eyes, dry mouth, increased appetite, mood swings and can increase the risk of depression, psychosis and suicidality. Marijuana vaping has also been implicated in the [recent spate of vaping-related lung injuries and deaths](#) known as EVALI (E-cigarette, or Vaping, product use Associated Lung Injury).

Marijuana use, regardless of how it is ingested, can have long-lasting effects on the developing teen brain. **Negative effects include:**

- ▶ Impaired attention, learning, problem-solving skills, memory and other cognitive functions
- ▶ Impaired reaction time and coordination, especially related to driving
- ▶ Academic or job difficulties, school dropout
- ▶ Increased risk of mental health issues including depression, anxiety and, in some cases, psychosis and suicidal thoughts
- ▶ Marijuana use disorder (addiction) and other substance use and addiction

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The likelihood of developing a marijuana use disorder, or addiction to marijuana, is about [twice as high](#) among teens than among adults who use marijuana.

## EVALI - Vaping-Related Lung Injuries

In the past year, there has been a wave of severe lung injuries and deaths associated with vaping. The condition, known as [EVALI](#) (E-cigarette, or Vaping, product use Associated Lung Injury), has sickened more than 2,800 people and has led to nearly 70 deaths across the country.

Symptoms include shortness of breath, weight loss, night sweats, fatigue, gastrointestinal problems, low oxygen levels and, in severe cases, lung failure and death. Most cases require admission to a hospital for treatment. While the federal government is investigating its precise cause, it has recommended avoiding use of any vapes, especially those containing THC, the psychoactive ingredient in marijuana, and those bought through illegal channels. Illegal sales appear to be the root in the majority of the tested cases (although several cases have been identified in which the adulterated vaping product came from a regulated marijuana dispensary). More than 150 different brands of THC-containing vapes have been implicated in cases of EVALI, and the ingredient that appears to be primarily responsible is Vitamin E Acetate. This ingredient is generally considered safe for eating in foods such as vegetable oils, cereals, meat, fruits and vegetables, or in vitamin or skin care products. However, it is not safe for inhalation into the lungs.

Since EVALI may be a life-threatening condition, a health care professional should be contacted immediately if a child demonstrates the symptoms of EVALI, especially in the absence of a lung infection.

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**In the event of life-threatening symptoms, call your local poison control center at 1-800-222-1222 or emergency services at 911.**

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# What Parents Should Know and Do

## What are the signs of vaping?

The following are some indicators that your child may be vaping:

Equipment	You may find devices that look like flash (USB) drives, e-liquid bottles, pods/ cartridges (that contain e-juice) or product packaging. Aside from leaf marijuana, gel jars that contain highly concentrated marijuana extract (dabs), small tools to scoop dabs and cartridges that contain THC oil or wax (a yellowish-brown substance) are signs of vaping marijuana.
Online purchases / packages in the mail / store purchases	Be on the lookout for purchases made online and charged to your credit card or unusual packages that arrive in the mail. Kids also buy them at big box stores, gas stations or from friends.
Scent	While the smell from vaping is faint, you may catch a whiff of a flavoring where there appears to be no other source. For example, if you smell bubble gum or chocolate cake, take note. It might be a flavored nicotine vaping product. Marijuana vapes can produce a skunk-like smell.
Increased thirst / nosebleeds / interest in stronger flavors	Some of the chemicals used in e-juices dry out the mouth and nose. As a result, some kids drink more liquids, have nosebleeds and may show a desire for stronger flavors (when the mouth is dry, flavor perception is reduced).
Decreased caffeine use	Some teens and young adults who vape nicotine develop a sensitivity to caffeine because both nicotine and caffeine are stimulants. Taking multiple stimulants can result in feelings of anxiety. If your child drank caffeinated energy drinks and has cut back or quit, it may be because of vaping.
Vaping slang	You may see vaping slang in text messages such as “atty” for an atomizer, “VG” for vegetable glycerin found in e-juice or “sauce” referring to e-juice. Getting “nicked” refers to the euphoria experienced with high doses of nicotine and feeling “nic sick” refers to heart palpitations, nausea/vomiting or lightheadedness associated with the overuse of nicotine vapes.
Social media and online references	Kids often brag about their vaping exploits on social media. Look for pictures or references on their Instagram, Snapchat, YouTube, Twitter and other social media accounts. Take note of popular vaping terms in their online searches.
Appearance and behavior changes	Vaping nicotine may lead to anxiety, irritability, difficulty concentrating and loss of appetite. Vaping marijuana can result in bloodshot eyes, dry mouth and thirst, increased appetite and shifts in behavior and mood. Sometimes, there is a noticeable change in friends and a decrease in activities that were once enjoyed.
Physical symptoms	Physical side effects of vaping may include trouble breathing, headaches, cough, dizziness, sore throat, chest pain and allergic reactions such as itchiness or swelling of the lips. More severe effects include worsening of asthma symptoms, lung disease or failure and heart disease.

## What can parents do to safeguard against vaping?

### *Know the facts*

Learn about the causes and consequences of youth vaping, be familiar with the popular brands and devices (e.g., JUUL, Suorin, Kandypens, Puff Bars, Stig, Posh), know what is being vaped (e.g., nicotine and/or marijuana, flavor types) and be prepared to answer your child's questions in an honest and credible way. It is better for them to come to you with questions instead of seeking out information from unreliable sources. For more answers to your questions see our [FAQs](#). Also, download our [marijuana talk kit](#) for information and useful tips.

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### *Have conversations*

Look for opportunities to discuss vaping with your child in a calm and reasonable way. When you think about it, there's likely no shortage of ways into this conversation: news stories, letters from the school about vaping policies, ads, seeing someone vaping on TV or on the street or passing a vape shop. Be ready to listen rather than give a lecture and be sure to focus on health and safety rather than threats and punishment. Try using open-ended questions to get the conversation going such as, "What do you think about vaping?" In these conversations, get their perspectives, acknowledge the potential appeal and help them weigh the risks against the perceived benefits. When answering their questions, offer honest, accurate, science-based information rather than trying to scare them, and try to have these conversations frequently, calmly and, if you can, before they try vaping.

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### *Try to understand why*

Most kids start vaping due to curiosity, because friends and family vape, the appealing flavors, to do vape tricks, or because they think it's cool or want to fit in. Over time, vaping can become habit-forming as kids do it to address other needs such as relief from boredom and anxiety. Some may become addicted to nicotine and continue vaping to avoid withdrawal symptoms. It helps to understand why your child is vaping by asking questions like: "What do you enjoy about vaping?" or "How does vaping make you feel?" Answers to these questions highlight your child's needs that can be addressed in a healthier way. It is also important to challenge children on their perceptions of norms. Teens tend to overestimate how many of their peers vape. Research shows that such overestimations increase the risk that they will vape to 'be normal' or just like their peers.

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### *Convey your expectations*

Set clear expectations. Share why you do not want your child to vape and point out that you expect your child not to vape. If you choose to set consequences, be sure to follow through and make sure that these consequences are not overly harsh or long-lasting. At the same time, try to encourage and reward healthier choices and ensure that your child has other means of having fun, feeling cool, fitting in, reducing stress and addressing anxiety or depression.

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### *Role play resistance skills*

Teach your child skills to resist pressures to use. Children in middle or high school are likely to be in social situations where they are offered an opportunity to try vaping. You might ask, "What would you say if someone offered you their vape?" See how your child would handle the situation. Practicing something along the lines of "No thanks, I'm not interested," said with direct eye contact and confident body language can help your child be prepared.

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### *Set a good example*

Set a positive example by being vape- and tobacco-free. If you do vape or smoke, keep your equipment and supplies secured.

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## What to do if your child is vaping

If your child vapes, try not to assume that it is just a phase or a “harmless rite of passage.” Vaping can be very addictive and most people do not just grow out of an addiction or become bored with it.

### *How worried should I be?*

Vaping is serious and worthy of concern. Just about all vaping products contain nicotine, a highly addictive drug, and the negative health effects are broad and can be serious. [The vast majority of people](#) with nicotine addiction started using a nicotine product before age 21. Despite this, a recent [survey of parents](#) of middle and high school students found that 40% said that they were not at all concerned about their own child’s use of vaping products. If you believe your child has tried vaping or is vaping regularly, it is definitely an issue worth addressing.

### *Take a health approach*

If you discover that your teen is vaping, address it as you would any other risk to your child’s health. Try to resist the urge to lecture, yell or punish your child. It is important to keep the lines of communication open, show your child that you are concerned about their health and safety, and keep the discussion from dissolving into a useless standoff.

### *Go easy on yourself*

When it comes to vaping, parents are working against strong forces. This includes limited government regulation, clever advertising and marketing and young people’s natural tendency to try risky things. Kids of all backgrounds, and many who have never before used an addictive substance, have been lured into vaping. With patience, love and the right interventions, you can help your child quit and get back to living a healthy life.

### *Get help*

It is important to think of youth vaping as a health rather than a discipline problem. It is very difficult to quit vaping, and youth are especially vulnerable to the addictive pull of nicotine. While some may be able to quit unaided, many young people who try to quit will experience withdrawal symptoms, including anxiety, irritability, difficulty concentrating and loss of appetite. Despite limited research (due to the fact that vaping is a relatively recent phenomenon), the most effective approach to helping a young person quit is through counseling, family and peer support. It’s also important to address potential underlying mental or emotional problems that might contribute to the desire to vape or use other addictive substances.

Several [online](#) and [text-messaging](#) programs are available to help teens and young adults quit vaping, and there are other digital platforms to [help parents and other caregivers](#) guide young people toward quitting. If a young person seems to be addicted to vaping, it is best to seek out the help and advice of their pediatrician. Physicians may choose to prescribe medications to address nicotine addiction, including nicotine replacement therapies or, for children aged 14 and older, Chantix (varenicline) or Wellbutrin (bupropion) to help control cravings. There currently are no medications available to treat youth who are addicted to marijuana vaping. Professional counseling is the best approach to treating marijuana addiction.

## What are the signs of EVALI and how should parents respond?

In light of the emergence of EVALI (E-cigarette, or Vaping, product use Associated Lung Injury), which has sickened thousands of young people across the country, the Centers for Disease Control and Prevention (CDC) encourages the public to be alert to the signs and symptoms and know how to respond.

Symptoms can include:

- ▶ Cough, shortness of breath or chest pain
- ▶ Nausea, vomiting, abdominal pain or diarrhea
- ▶ Fever, chills or weight loss

Parents should let their children know about this condition. Share these CDC recommendations, which indicate that, in light of its severity and potential fatality, they should not:

- ▶ Use any THC-containing e-cigarette or vaping products.
- ▶ Buy any type of e-cigarette or vaping products, particularly those containing THC, from informal sources, such as friends, family or in-person or online dealers.
- ▶ Modify or add any substances to e-cigarette or vaping products that are not intended by the manufacturer, including products purchased through retail establishments.
- ▶ Add vitamin E acetate to e-cigarette or vaping products. While it appears that vitamin E acetate is the ingredient responsible for the illnesses, evidence is not yet sufficient to rule out contribution of other chemicals of concern.

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**If your child is experiencing symptoms consistent with EVALI, contact your health care provider immediately.**

**In the event of life-threatening symptoms, call your local poison control center at 1-800-222-1222 or emergency services at 911.**

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