

Lung Cancer  
**CHOICES**  
4th Edition



## Chapter 11

# How to Quit Smoking Confidently and Successfully

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### Introduction

Smoking cessation (quitting smoking) is one of the best things we can do to help our bodies protect us from disease, fight illness, undergo treatment, and help our bodies heal. Research shows that 70% of people who smoke want to quit but only 3-5% are successful because they attempt to quit without help.<sup>1-3</sup> There are many reasons why people want to quit smoking, and better health is often at the top of the list.<sup>4</sup> Unfortunately, many people who actively smoke have had many unsuccessful quit attempts; this can be discouraging, and it can prevent people from trying to quit again.

The chances of succeeding in quitting smoking are 2-3 times greater when cessation treatment and therapeutic support is provided.<sup>5</sup> Knowing how to approach quitting smoking, find the necessary support, and be successful in quitting for good can be challenging. The content in this chapter provides the key information needed to understand how nicotine dependence occurs, what happens when quitting nicotine, and how to avoid the unpleasant symptoms of nicotine withdrawal. But most importantly, how to quit smoking safely and effectively.

### Chemicals in Cigarettes

Cigarettes contain tobacco and up to 7,000 other ingredients, including many that are harmful to our health.<sup>6</sup> When smoking a cigarette, toxic gases including carbon monoxide (which is poisonous) and chemicals, such as tar, are inhaled and build up in the blood.<sup>7</sup> These gases and chemicals circulate throughout the body and cause damage to the body's cells. Additionally, cigarettes contain nicotine (the potent substance from the tobacco plant). Nicotine is the notable ingredient in all tobacco products, that causes physical, mental, and behavioral dependence and make it so hard to quit smoking.<sup>8</sup>

## How Nicotine Affects the Brain

When a cigarette is smoked, combustible gases and chemicals are inhaled into the lungs and quickly travel from the lungs into the arterial blood and to the left side of the heart. The left side of the heart, with each beat, moves this oxygenated arterial blood including the contents of the cigarette, out to the body's tissues, organs, and straight to the brain. The transfer of nicotine, from the time a puff from a cigarette is inhaled to the time it is delivered to the brain, occurs quickly, within three to ten seconds.

## How Nicotine Withdrawal Happens

Nicotine is clever in how it works in the brain. It easily attaches to receptors in the brain that are specifically responsive to nicotine, called the nicotinic acetylcholine receptors. Everyone has these receptors in the brain, but for smokers, these receptors are specifically stimulated by nicotine and respond in a way that the non-smoker does not experience. When the nicotine attaches to the receptor, the receptors are stimulated to release neurotransmitters (chemicals that your body makes) from that receptor. Dopamine is the most dominant neurotransmitter released when nicotine attaches to these nicotinic acetylcholine receptors but there is a host of other neurotransmitters released. These neurotransmitters stimulate the reward center in the brain, creating a pleasurable experience that many people describe as a “brain buzz”. Dopamine and the other neurotransmitters also enhance energy, concentration, elevate mood, and suppress appetite. The instant satisfaction and other normal bodily responses to nicotine are all reasons why people continue to smoke, and dependence on cigarettes occurs and persists.<sup>8</sup>

The more cigarettes smoked, the more circulating nicotine is present and attaches to the nicotinic acetylcholine receptors. This results in higher dopamine levels in the brain. Nicotine is quickly metabolized, begins losing its stimulating effects soon after it is inhaled, and is gone within two hours. Once nicotine metabolizes and disappears in the body, tissues, and brain, the receptors are empty and stop expressing dopamine, and the dopamine levels drop. It is at this point that the receptors start begging for more nicotine and withdrawal symptoms are experienced, which result in an increased urge to smoke.

## Identifying Nicotine Withdrawal Symptoms

The physical and mental changes that people experience when their nicotine levels drop can be difficult to cope with for many reasons. Most of the withdrawal experience is due to the drop in dopamine levels in the brain. Withdrawal symptoms can occur with any changes in the use of nicotine, including missing just one cigarette, cutting back on the typical intake of nicotine, or stopping the use of nicotine altogether. These symptoms, their intensity, and frequency vary from person-to-person and directly correlate with the amount of nicotine that is routinely consumed and the concentration of nicotine levels in the body.<sup>7</sup>

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Common symptoms of withdrawal include anxiety, irritability, agitation, and a drop in mood or even depression. People also experience disturbance in their sleep, difficulty with concentration, changes in bowel function, increased appetite, and urges to smoke.<sup>7</sup> These symptoms are unpleasant and for many intolerable. If not prevented or treated, these symptoms lead to a powerful urge to smoke again. Replenishing nicotine by having just one cigarette, will ease or eliminate these symptoms. People often revert to smoking, because it makes the symptoms of withdrawal go away, almost instantly. When quitting smoking, staying away from cigarettes is the most important part of both short-term and long-term success in staying quit. There are proven methods of quitting smoking that minimize and even prevent the unpleasant and detrimental symptoms of withdrawal from nicotine.

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## What it Takes to Quit Successfully

There are many ways to quit smoking and stay quit. People can quit on their own, but it can be a challenge to do this alone. There is a much higher chance of success when smokers can secure support and counsel from a health care professional or a specialist trained in how to quit smoking. Using nicotine replacement therapy with or without prescription medication to stop at least doubles the chances of long-term success and in some cases, even quadruples the chances of quitting for good.<sup>8-10</sup>

## Options for Quitting Smoking: Nicotine and Non-Nicotine Therapy

Understanding the way nicotine affects the brain and how withdrawal occurs is important when quitting smoking. Moreover, knowing how to minimize and even prevent withdrawal symptoms is vital in successfully quitting. The following are descriptions of what is available to help people quit smoking and practical approaches to using these methods in quitting.<sup>11</sup>

### Nicotine Replacement Therapy

Nicotine replacement therapy has been utilized for many years, is readily available, and can be a very effective approach to quitting smoking. Similar to the use of nicotine products like cigarettes, the body absorbs nicotine in the bloodstream and finds its way to the brain. But the difference with nicotine replacement therapy is that toxic chemicals are not inhaled into the lungs. When nicotine from the replacement therapy reaches the brain, it attaches to the

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nicotinic acetylcholine receptors, which in turn, stimulates the release of dopamine, and other neurotransmitters. Nicotine replacement therapy mimics delivery of nicotine by a cigarette but delivers nicotine to the brain by another mode, thus preventing and treating withdrawal symptoms.<sup>8</sup>

The most important thing to remember when using nicotine replacement therapy is to be sure to get enough nicotine replacement. If not used properly, it will not work to prevent withdrawal symptoms. Often people feel that the patch, gum, or lozenge did not work for them, because they were not getting enough replacement of nicotine to prevent symptoms of withdrawal. Getting enough nicotine with a combination of the long-acting patch and a short-acting method will prevent withdrawal symptoms, make quitting smoking much easier, and provide a smoother transition off cigarettes.

**Example:** If 1 pack per day (20 cigarettes) is routinely smoked, start the patch regimen at 21mg on the quit date. Use this dose every day for 4 weeks, then step down to a 14mg patch for 2-4 weeks, then step down to a 7mg patch for 2-4 weeks, and then stop.<sup>11,12</sup>

### Transdermal Nicotine Patch, A Long-acting Nicotine Replacement

Nicotine replacement is available in a patch that delivers nicotine continuously over 24 hours.<sup>10</sup> The patch is a long-acting delivery method by allowing a steady amount of nicotine to pass, from the patch, through the skin, directly to the blood with immediate transport to the brain. It is important to dose the patch according to how many cigarettes are smoked in a day so that enough nicotine is available to prevent withdrawal symptoms. One cigarette contains about 1mg of nicotine. The patch should be dosed 1mg for every cigarette smoked in a typical day. Choosing the right dosed patch will give an optimal delivery of nicotine to the brain and minimize or prevent withdrawal symptoms.<sup>9,11-12</sup>

Patch Dosing Recommendation<sup>11</sup>

less than 10 cigarettes/day (less than a 1/2 pack per day)	14mg patch
10 or more cigarettes/day (1/2 pack per day or more)	21mg patch
more than 20 cigarettes/day	Dose patch to the number of cigarettes smoked per day with the guidance of your health care provider

The patch needs to be changed every 24 hours. It is recommended to use the initial patch dose for one full month and then step down the patch doses every 2-4 weeks until off the lowest dose.

In this example, the nicotine replacement patch would be used for a total of 8-12 weeks (2-3 months) following the quit date; this ensures a safe and effective transition off nicotine. **This is longer than many people think they need to use patches. Remember, the key is to be successful in the long run so, wean off as slowly as needed; there is no rush!**

The patch delivers relatively steady levels of nicotine, but breakthrough urges to smoke can occur. This is where short-acting nicotine replacement therapy can be very helpful in further shutting down the cravings to smoke.

### Tips on Using the Patch

1. The patch is a long-acting medication formulation. For safe, effective, and continual delivery of the medication (nicotine) the patch should NOT be cut.
2. Similar to cigarettes, the nicotine in the patch is stimulating and can cause active or vivid dreaming as well as wakefulness at bedtime. Unless you are accustomed to waking up to smoke throughout the night, you may want to consider taking the patch off an hour before bedtime to ease these symptoms and avoid disruption of sleep. Start a new patch as soon as you wake up in the morning.
3. Remember that it takes at least an hour for the nicotine in the new patch to deliver a steady concentration of nicotine in the bloodstream. It is important to use a short-acting nicotine replacement, in combination with the long-acting patch, for urges to smoke.

## Short-acting Nicotine Replacement

Nicotine replacement is available in several forms of short-acting delivery methods. These short-acting doses of nicotine are essential in the success of using nicotine replacement therapy in quitting smoking. Even if the transdermal patch is used continuously for nicotine replacement, breakthrough urges to smoke could occur and lead to withdrawal symptoms. Think of short-acting nicotine replacement as a quick-acting, rescue, medication. Treating these cravings with one of the following four options of nicotine replacement in combination with the long-acting patch is one of the most effective ways to avoid lapsing or relapsing with a cigarette and returning to regular patterns of smoking.

### Nicotine Gum

Nicotine gum is available in 2mg and 4mg doses. Importantly, the gum only works if it is absorbed through the mucosal lining of the mouth (between gum and cheek). The best way to use the gum is

to start with the lower dose first, chew it until there is a peppery/spicy, tingly sensation, then park it between the gum and cheek for 5 minutes. Then chew it again until there is another sensation (about a minute) and park it. Continue this pattern for about five cycles (approximately 30 minutes total) to get the full dose of nicotine the gum has to offer. The chewing for a minute is necessary to activate and release more nicotine in the gum, then park it for optimal absorption. It is safe to chew up to 20 pieces of gum a day for breakthrough cravings and withdrawal symptoms.<sup>9,11-12</sup> This product is available over the counter for purchase. Many insurance companies are now covering this when prescribed by a health care provider.

### Getting the Most out of the Nicotine Gum

Nicotine gum is **not** effective when wearing dentures but can be chewed and effective if the dentures are out of the mouth. Chewing the nicotine gum like a regular stick of gum may cause ingestion/swallowing of the nicotine and cause nausea, indigestion, or even hiccups. Swallowing nicotine also disrupts the proper absorption of the nicotine because of the acid in the stomach. Avoid carbonated drinks and acidic foods and beverages before and during use of the gum because these too will destroy the action of the nicotine in the gum.<sup>12</sup>

### Nicotine Lozenge

The nicotine lozenge is similar to the gum. It is available in 2mg and 4mg doses and, like the gum, needs to be parked between the gum and cheek to be optimally absorbed. The standard starting dose is the 2mg lozenge, which delivers the equivalent of nicotine in one cigarette. Like the gum, avoid eating and drinking acidic foods and beverages right before and while a lozenge is in the mouth. This product is also available over the counter and by prescription.<sup>9,11-12</sup> These lozenges vary in size and dissolvability by the manufacturer. Cheaper over the counter, products are often reported by people to be too big and bulky and take too long to dissolve in the mouth. . There is a “mini” lozenge on the market that is the size of a Tic-Tac, is easily tucked between the gum and the cheek and dissolves readily while delivering nicotine quicker to the brain.

### Nicotine Nasal Spray

The nicotine nasal spray contains nicotine that is delivered through the mucosal wall of the nose. When instilling this nicotine, it is important to spray it against the nasal wall while plugging one nostril (side of the nose) and (while looking at the floor) inhale while spraying. Avoid tipping the head back and sniffing it into the upper region of the nasal passages. One spray in each nostril delivers a similar dose of one cigarette (two sprays total). This product is available by prescription only.<sup>9,11-12</sup>

## Nicotine Inhaler

The nicotine inhaler is a popular method of short-acting nicotine delivery for people who have a strong attachment to the ritual of holding and handling a cigarette, but many people and health care providers do not know about it. Although this is called an “inhaler”, the nicotine delivery is taken in by puffing on the inhaler, not taking a deep inhalation, or “drag”, as would be done with a cigarette. The nicotine is absorbed through the mucosa of the mouth so it is important to only puff it into the mouth for optimal absorption. This product is available by prescription only and is different from an E-cigarette, which is discussed later in this chapter.<sup>9,11-12</sup>

A dispensing pharmacist can teach you how to load and use the inhaler. The inhaler is not effective if dentures are in place.

Long-acting transdermal nicotine patch + Short-acting nicotine (gum, lozenge, inhaler, or nasal spray) = Quitting Successfully!

## How to Know if you are Getting too Much Nicotine Replacement

It is possible to be taking too much nicotine replacement. Symptoms that could be associated with taking too much nicotine are feeling anxious, jittery, headache, nausea, excessive wakefulness, and chest pain or heart palpitations. If you develop these symptoms or any others that you think are associated with nicotine delivery, stop using all nicotine products. Take the patch off and call your health care provider for further advice, as soon as possible. Remember to avoid smoking cigarettes while using any nicotine replacement therapy to reduce the chances of overdosing on nicotine and provide the best opportunity for you to quit.

## Non-Nicotine/Prescription Medication Therapy Options

### Bupropion Sustained Release

Bupropion Sustained Release (SR) is a long-acting prescription medication that is commonly used to help people quit smoking. It has shown to increase the chance of quitting smoking by 80% and works well with the nicotine replacement therapies.<sup>8</sup> It is also known as “Zyban” and “Wellbutrin”. Some people are hesitant to take this medication because they have heard that it is used for depression and do not want to take an “antidepressant”. This is true; bupropion is used for depression because it allows more of the neurotransmitters, dopamine, and norepinephrine, to circulate in the brain. Remember that nicotine drives the dopamine levels up and therefore, the brain experiences a mood elevation when smoking. When the dopamine levels drop with the withdrawal of nicotine, the brain can experience agitation, anxiety, and depressive mood changes. Bupropion helps in the transition off cigarettes/nicotine because it allows more dopamine to circulate and prevents the brain from experiencing an abrupt withdrawal off the dopamine. It reduces the craving for cigarettes, helps with the anxiety of quitting smoking, and often suppresses

appetite and controls weight gain associated with quitting smoking.<sup>7-9,12</sup> Talk to your health care provider to determine if bupropion is the right medication for you.

### **Varenicline**

Varenicline (also known as “Chantix”) is a prescription medication commonly used to help people quit smoking. Varenicline has shown an increased success rate in quitting smoking of up to fourfold.<sup>12</sup> This medication works by attaching to the same receptors in the brain and causes the same release of dopamine that nicotine does. This medication mimics the presence and action of nicotine and tricks the brain into thinking it has nicotine onboard.<sup>7-9,12</sup> Because of the way this medication mimics the presence of nicotine and attaches to the nicotinic acetylcholine receptors in the brain, it is not designed to be used in combination with nicotine replacement therapy, unless directed otherwise by a health care provider. This medication greatly reduces the craving for nicotine and reduces withdrawal symptoms. Talk to your health care provider to determine if varenicline is the right medication for you.

#### **Tips on Taking Bupropion SR and Varenicline**

Always take these medications with food to avoid nausea. If you are taking these medications twice a day, be sure to take the second dose closer to dinnertime to prevent the disruption of sleep and vivid dreams. Like nicotine from cigarettes, varenicline stimulates the central nervous system, and because of this action, it is more activating than sedating, taking it with dinner is ideal. Sometimes a dose adjustment is necessary, to tolerate the medication and optimize your opportunity to quit smoking.

Bupropion (aka Wellbutrin or Zyban) and varenicline are more activating than sedating. If you experience agitation or even anxiety that does not go away, it might mean you need to reduce the dose of the medication or even stop it.

Cutting back on the dose may reduce these symptoms and allow you to benefit from its action in helping you quit.

**If you experience any symptoms that persist or include disturbing thoughts or changes in your mood, you should stop the medication immediately and call your health care provider.**

### **Vaping/Electronic Nicotine Delivery Systems (e-Cigarettes)**

Many people are asking about the use of electronic cigarettes, also known as e-cigarettes or “vapes”, as a replacement for conventional cigarettes or as aids in quitting smoking. Vaping and electronic cigarettes are battery-operated devices that deliver nicotine and other chemicals to the



body through an inhaled vapor or aerosol rather than a combustible gas, as cigarettes do. Some people feel that vapes and electronic cigarettes may be safer for their health because they do not “light up” or create combustible gases while using them. Currently, there is no clinical research to suggest that vaping and electronic cigarettes are effective in quitting smoking. In fact, they may contribute to sustained dependence on nicotine and smoking cigarettes, making it difficult to quit smoking.<sup>13-15</sup> Due to increasing national clinical reports of severe respiratory illness and even death directly related to the use of these products, at the time of this publication, federal health authorities and agencies are advising against the use of such products, especially those purchased on the street (bootlegger). The long-term safety of electronic cigarettes or vapes is not known and using them is not recommended at this time.<sup>16</sup>

## Individual and Behavioral Counseling and Quitting Smoking

Nicotine replacement therapy and non-nicotine medication therapies clearly show effectiveness in helping people quit smoking long-term. There is also good scientific evidence that shows that individual and behavioral counseling sessions, as a stand-alone therapy, or when combined with nicotine replacement therapy, or non-nicotine medication therapy, significantly improves the sustained success rates of quitting smoking.<sup>9,17-18</sup> The more counseling support provided can further increase rates of smoking cessation by 10 to 20%.<sup>19</sup>

## Support Groups

Support groups are often available through local community centers, medical centers, hospitals, public health departments, and local chapters of the American Lung Association and American Heart Association. Someone trained in tobacco cessation counseling usually runs these groups. The support groups can be an excellent way to connect with other people who are working on quitting. Gather tips and ideas about how to quit successfully and find much-needed support when trying to quit and staying quit for good.

## Complementary and Alternative Medicine Approaches to Quitting

There are many complementary and alternative therapies available that may be helpful to quit smoking. Some of the more common and popular methods are acupuncture or acupressure, hypnosis, massage, and herbal preparations or medicines. These approaches have not been widely studied, and current research does not show these methods are effective in long-term success in quitting smoking. However, some have shown to contribute to long-term quit success when combined with other evidence-based therapies, as discussed in this chapter.<sup>20-21</sup>

*“Be gentle with yourself. You’re doing the best you can!”*

*-Anonymous*

## Technology Based and Remote Cessation Support

### Web-based/Online support

There are web-based smoking cessation resources on the internet. These online resources provide support and counseling options. There is not a lot of existing evidence that these resources are highly effective when used as the only approach to quitting smoking.<sup>22</sup> However, using them in combination with nicotine replacement with or without non-nicotine therapy likely adds benefit in quitting smoking.<sup>23</sup>

#### American Lung Association/Freedom from Smoking

[www.ffsonline.org](http://www.ffsonline.org)

#### U.S. Department of Health and Human Services

[www.smokefree.gov](http://www.smokefree.gov)

#### Become An EX

[www.becomeanex.org](http://www.becomeanex.org)

#### Quitnet

[www.quitnet.com](http://www.quitnet.com)



### Quitlines

There are telephone quitlines available in most states. The services they offer vary depending on the funding for that program, but they typically provide telephone counseling by trained quit coaches plus follow-up telephone calls. The counselors are trained in helping people quit smoking and can assist in making a personalized quit plan. They will provide educational resources and many will mail nicotine replacement therapy, including the long-acting nicotine patch and either the gum or lozenge, for free. With a prescription, some are able to offer medications like bupropion (Zyban or Wellbutrin) and varenicline (Chantix) at a reduced cost.

The quitline specific to any state in the U.S. or any of the Canadian provinces can be located by calling the North American Quitline Consortium (NAQC) at 1-800-QUIT-NOW or by visiting their website at [www.naquitline.org](http://www.naquitline.org). You can also find out about local resources through your local public health department or by searching online using your specific state or city and “quit smoking” as keywords. Many employers, especially large employers, have contracts with a professional quitline service that can benefit employees and even family members of employees. The services and resources they provide are similar to the public quitlines. Call your Human Resources department at your job to see if they offer this benefit and cover smoking cessation medications, including over the counter nicotine replacement therapy.

## How to Deal with Lapse and Relapse

When quitting smoking, it is common to experience a lapse in the quit attempt. A lapse is when a single or a few cigarettes are smoked. A relapse is when regular smoking is resumed and lasts longer than seven days. It often occurs when people encounter strong triggers for smoking, including stressful situations or events.<sup>7</sup> This can also occur if treatment is disrupted or stopped too soon.

### Identifying Triggers to Smoke

Lapses and relapses are sometimes part of the road to success in quitting long-term.<sup>9</sup> When a lapse or relapse occurs, people often feel bad about this disruption in the success of their quit attempt. In either case, it is possible to resume the quit attempt successfully. Return to the approaches and methods that helped quit in the first place and reach out to your health care provider and other support systems. Avoid negative talk to yourself or others who have had a lapse or relapse and remember to avoid triggers and focus on previous success and the goal of quitting for good.

When quitting smoking, it is important to address your lifestyle, rituals, and behaviors that are associated with smoking. Make a list of activities, people, or things that trigger the urge to have a cigarette. Be aware of these triggers and, if possible, plan to avoid them by restructuring daily routines and intentionally develop new rituals in your life that do not include cigarettes. It can be helpful to tell people close to you or those you encounter frequently that you are quitting smoking; this will help them support you in your efforts.

### Conclusion

Quitting smoking is one of the best actions you can take to protect your health. Quitting also helps your body prepare for and optimally respond to medical treatment, and enhances your ability to heal following surgery.<sup>24</sup> Regardless of how long you have smoked, quitting smoking has immediate and long-term health benefits. It's never too late to quit.<sup>7</sup> It can be challenging to quit, but with the right tools and knowledge about the best and most effective approaches to quitting smoking, quitting is a more realistic and obtainable goal.

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## Notes

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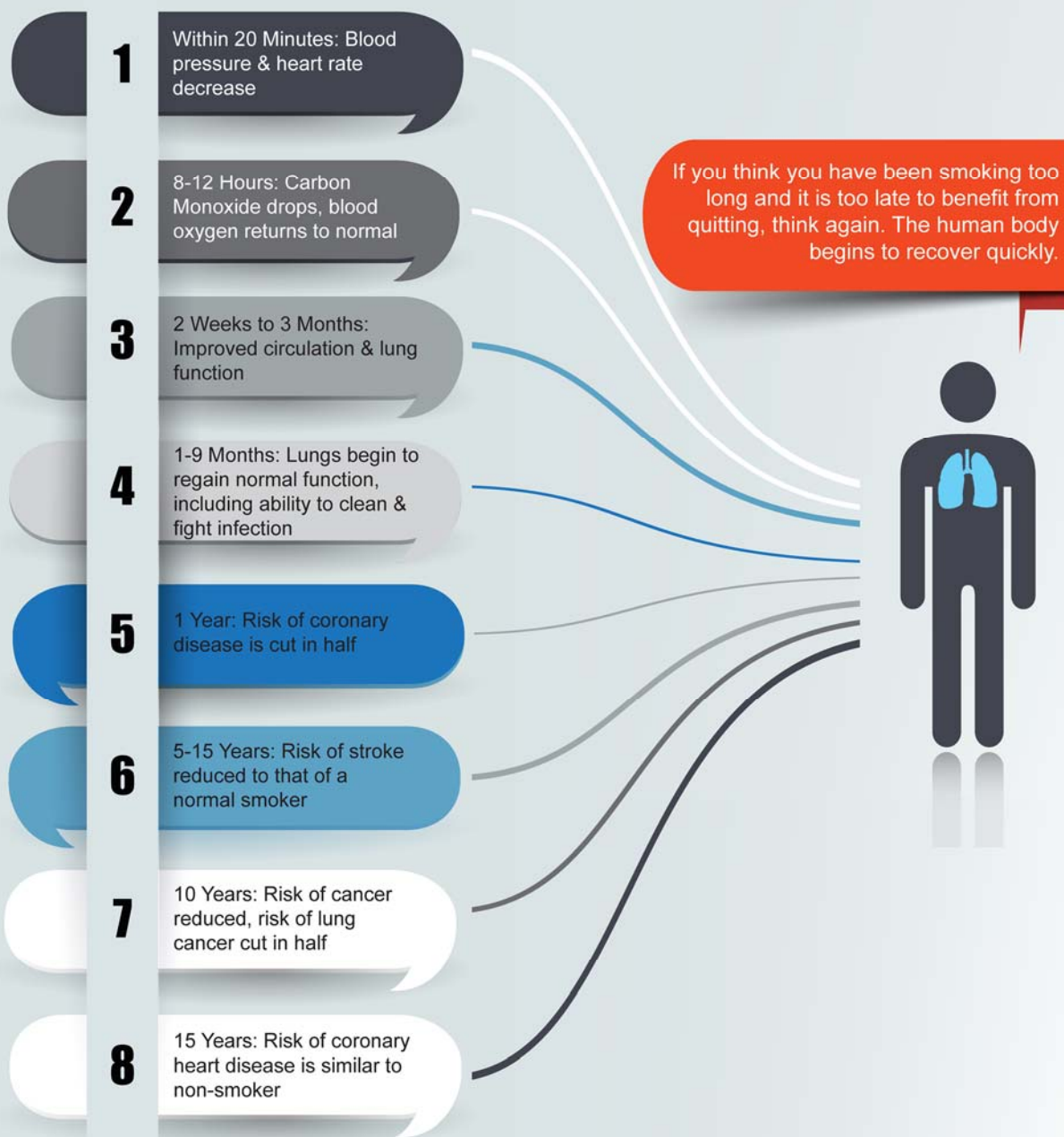
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# Quitting smoking is one of the best actions you can take to protect and maintain your health.



Source: [cancer.org/healthy/stayawayfromtobacco/guidetoquittingsmoking/guide-to-quitting-smoking-benefits](https://www.cancer.org/healthy/stayawayfromtobacco/guidetoquittingsmoking/guide-to-quitting-smoking-benefits)

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