

# Nicotine Replacement

## Frequently Asked Questions

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# ▶ Nicotine replacement therapy background information

## What is NRT?

NRT is an abbreviation for nicotine replacement therapy. Nicotine replacement therapy is sometimes called therapeutic nicotine, medicinal nicotine, or nicotine reduction therapy. The best known nicotine products are nicotine patches and nicotine gum, but there are also other types.

## What are the main types of NRT?

The NRT products that are available in Australia are:

- ▶ patches
- ▶ gum
- ▶ lozenge
- ▶ mini-lozenge
- ▶ inhaler
- ▶ mouth spray
- ▶ oral strips

Patches deliver nicotine through the skin. The other products deliver nicotine through the mouth.

## Why use nicotine after stopping smoking? Isn't nicotine what you want to give up?

Nicotine replacement increases the odds of quitting smoking by around 60% compared to placebo.<sup>1</sup> It reduces cravings for cigarettes and dampens nicotine withdrawal symptoms such as irritability, anxiety, depression and restlessness.<sup>1</sup> The idea is to use “clean” nicotine, without the many additional toxins in tobacco smoke, for a limited period to “wean” yourself off cigarettes.<sup>2-4</sup>

Research indicates that nicotine is not a direct cause of tobacco-related disease.<sup>3</sup> The main problem with nicotine delivered by cigarettes is that it causes people to breathe in tobacco smoke over long periods.<sup>3</sup>

## Isn't quitting really about willpower?

Self-control and determination are almost always needed to quit smoking.<sup>5</sup> However, physical addiction to nicotine undermines willpower by distorting people's motivation and giving an unhealthy priority to cigarettes.<sup>4,5</sup> It is not a sign of weakness to use NRT for a time to help rebalance brain chemistry to increase the odds of quitting.<sup>2</sup> Quitting smoking is a competition against cigarettes, not other people. It is better to do whatever it takes to get the job done, because cigarettes are lethal.<sup>2</sup>

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# ▶ Making best use of Nicotine Replacement Therapies

## What dose should people take?

Information about dosing using single types of NRT is given in the table on page 3 adapted from the 2015 NSW Ministry of Health booklet *Managing Nicotine Dependence: A Guide for NSW Health Staff*. The updated table includes information on recent changes to regulations on when NRT should not be used (contraindications). Information about combining different types of nicotine replacement is given in the next section, *How do you get best results from NRT?*

Many experts now view smoking within half an hour of waking as a better indicator of high dependence than number of cigarettes per day.<sup>6</sup> It is worth bearing in mind that some people may be restricted from smoking as many cigarettes as they would like each day, for example, due to smoke-free rules or the cost of smoking, and therefore smoke their remaining cigarettes more intensely.<sup>6</sup>

Using a single type of NRT results in levels of nicotine in the blood that are approximately a third to half those of the nicotine levels caused by smoking.<sup>7</sup> While smokers sometimes try to calculate their NRT dose relative to the nicotine measurements that are printed on the side of cigarette packs, such calculations are misleading and should not divert people from following the manufacturers' instructions available in all NRT packs.

## Nicotine replacement therapy initial dosing guidelines

	Client Group	Strength	Dose	Duration	Contraindications (adapted from MIMS online 2016)
Patch	>10 cigarettes per day and weight >45kg	21mg/ 24hr patch or 25mg/ 16hr patch	1 patch per day	>8 weeks	(Unscheduled) Non-smokers, children under 12, hypersensitivity to nicotine or any component of the patch, diseases of the skin that may complicate patch therapy.
	<10 cigarettes per day or weight <45kg or cardiovascular disease	14mg/ 24hr patch or 10mg/ 16hr patch	1 patch per day	>8 weeks	
Gum	First cigarette >30 mins after waking	2mg gum	8–12 per day	>8 weeks	(Unscheduled) Non-smokers, known hypersensitivity to nicotine or any component of the gum, children (<12 yrs).
	First cigarette <30 mins after waking	4mg gum	6–10 per day	>8 weeks	
Inhaler	Assessed as nicotine dependent	15mg cartridge	3–6 cartridges per day	>8 weeks	(S2) Non-smokers, hypersensitivity to nicotine or menthol, children (<12 yrs).
Lozenge	First cigarette >30 mins after waking	1.5mg or 2mg lozenge	1 lozenge every 1–2hrs	>8 weeks	(Unscheduled) Non-smokers, hypersensitivity to nicotine or any component of the lozenge, children (<12yrs), phenylketonuria.
	First cigarette <30 mins after waking	4mg lozenge	1 lozenge every 1–2hrs	>8 weeks	
Mouth Spray	Assessed as nicotine dependent	1mg	1–2 sprays every 30min to 1hr or up to 4 sprays per hr	>8 weeks	(Unscheduled) Non-smokers, children <12.
Oral Strip	First cigarette >30 mins after waking	2.5mg strip	1 strip every 1–2hrs – use at least 9 per day, no more than 15 strips per day.	>8 weeks	(Unscheduled) Non-smokers, children <12.

## How do you get the best results from NRT?

For many years the recommended way to use nicotine replacement was for a person to start using a single type of NRT on their quit date. However, recent research has found some new ways to improve success beyond this standard regime. This has led to the changes in NRT product regulations summarised in the table (with further explanation below).

### Making the best use of nicotine replacement

Situation	Recommended use of NRT
Ready to quit in the next few days or weeks	Wear 21mg patch whilst still smoking for two weeks before quitting (if smoking 15+ cigarettes/day)
Finding quitting hard using a single type of NRT, or has found it hard in the past	Add 2mg oral products to patch
Not ready to quit right now but ready to quit within the next few months	Use oral nicotine products such as gum or lozenges to reduce cigarettes gradually

## Using a patch before quitting

### How do you get the best results?

Research indicates that wearing a 21mg patch whilst still smoking for two weeks before quitting increases success. This may work by reducing the rewarding feelings from smoking.<sup>1,8</sup> Using a patch daily before quitting is approved for people who smoke 15 or more cigarettes per day.<sup>9</sup> After a person has stopped smoking, they should continue to use the patch in the usual manner and can add oral NRT products if needed (also see next section).

In the past, there was considerable concern that smoking and wearing a patch might cause heart attacks. Later research has found that smoking whilst using NRT is not significantly more risky than smoking on its own.<sup>3,10</sup> However, product labelling indicates that people who already have cardiovascular disease should not use the patch at the same time as smoking.<sup>9</sup>

## Combining different types of nicotine replacement products

### How do you get the best results?

Compared to single types of NRT, quit rates can be increased by combining patches with 2mg oral nicotine products, for example, the gum, inhaler, lozenge or tablet.<sup>1</sup>

Combinations of different types of NRT are suitable for people who:

- ▶ have been unable to quit in the past using single forms of NRT
- ▶ are experiencing significant cravings using the patch alone
- ▶ are highly dependent, for example, who smoke within 30 minutes of waking
- ▶ have made multiple failed attempts
- ▶ are experiencing nicotine withdrawal using only one form of NRT.<sup>11</sup>

Combinations of NRT are safe.<sup>2</sup> Between four and 12 pieces of oral NRT are recommended on top of the patch.<sup>12</sup> The pre-quit patch and combination approaches can be combined: wear a patch and smoke for two weeks before quitting; use combination nicotine replacement after quitting.<sup>9</sup>

## Quitting gradually using nicotine replacement

### How do you get the best results?

For smokers who are not ready to quit straight away, using oral NRT products (gum, lozenge, mini-lozenge, inhaler, mouth spray, oral strip) to gradually replace cigarettes over a period of weeks or months is helpful.<sup>13</sup> Product guidelines recommend:

- ▶ reducing cigarettes by half over six weeks
- ▶ cutting out remaining cigarettes within six months
- ▶ using NRT as normal after the quit date.<sup>14</sup>

### How long should you use NRT?

At least eight weeks' use of NRT is recommended for best results.<sup>15</sup> Not using NRT for long enough is generally more of a problem than using NRT for too long.<sup>2,16</sup> Smokers should use NRT for as long as they require to feel 100% sure that they can give up smoking.<sup>15</sup> A period of two weeks without cravings, withdrawal symptoms or strong temptations to smoke is sometimes used to assess if someone is ready to stop NRT.<sup>2</sup> Some smokers may need to use NRT for months or even years in order to remain off cigarettes.<sup>2</sup> Continuing smoking is a much bigger problem than long-term NRT use.<sup>2</sup>

## Is there a difference between types of NRT?

There is little difference between types of NRT in terms of effectiveness.<sup>1</sup> Personal preference is an important factor in choosing the type of NRT to use.<sup>11</sup> If a smoker doesn't like a particular product, it is worth trying another type.<sup>15</sup> One advantage of using the nicotine patch is that you only put it on once a day, so it is easier to remember.<sup>17</sup> On the other hand, oral nicotine products can be used to respond quickly to urges to smoke.<sup>4,18</sup>

## I had a few cigarettes after quitting for a while - should I still use the patch?

It is best to keep using patches to try to cut out the cigarettes.<sup>2</sup> NRT can help to stop a person returning to full-time smoking after having a "slip up" of a few cigarettes.<sup>19</sup> Smoking while using the patch could be a sign that a person is not getting a high enough dose of NRT: it is much better to add oral NRT, such as gum, to the patch than to smoke. Some smokers are concerned that they may suffer a heart attack if they smoke whilst wearing a patch, and therefore they stop using the patch when they intend to have a cigarette. However, smoking whilst wearing a patch is not significantly more risky to the heart than smoking alone.<sup>3</sup>

## If your NRT didn't work in the past, should you use it again?

Nicotine replacement is not a magic bullet to quit smoking.<sup>15</sup> Sometimes people have exaggerated expectations of NRT, thinking that it will make quitting very easy.<sup>2</sup> Quitting smoking generally takes several attempts, with or without medications.<sup>20</sup>

Previous unsuccessful attempts to quit with NRT may be a result of underdosing.<sup>21</sup> For example, a person may not have been using oral NRT regularly enough<sup>16</sup>, or they may have found the patch on its own insufficient, in which case they could try combining the patch with oral NRT.<sup>11</sup>

On the other hand, sometimes people genuinely don't find NRT very helpful.<sup>2</sup> Clients may want to consider using prescription quit smoking medications, such as varenicline or bupropion, instead.<sup>2</sup> This should be discussed with their doctor.

## What are the solutions for some common NRT problems?

**Problem:** Oral products taste bad.

**Solution:** Nicotine has a hot, chilli-like taste.<sup>15</sup> People generally get used to the taste over a day or two.<sup>15</sup> Switching brands for better flavourings may help. Alternatively, change to patches.

**Problem:** Hiccups or indigestion with gum.<sup>14</sup>

**Solution:** Check that the gum is not being chewed too vigorously – alternate between chewing and holding the gum against the side of the mouth.<sup>2</sup>

**Problem:** The patches are falling off.

**Solution:** This can be due to sweating in summer. Ring the manufacturer (the number is on NRT packaging) to see if they recommend taping the patch on.

**Problem:** I want to cut the patches in half to save money/ reduce the dose.

**Solution:** This is not recommended as it is likely to lead to underdosing.

**Problem:** The inhaler isn't working very well.

**Solution:** Breathe in and out through the inhaler rather than breathing deeply.<sup>21</sup> Check that the nicotine cartridge is replaced at least every two hours, as nicotine will evaporate over that time, although the menthol taste will remain.

## Are there any other key tips for using NRT?

- ▶ Use oral NRT products regularly, for example, every one – two hours; don't minimise use.
- ▶ Avoid coffee, juice, soft drinks and alcohol for 15 minutes before using oral nicotine products.
- ▶ Don't drink at all whilst using the oral products.<sup>2</sup>
- ▶ Nicotine lozenges should be sucked, not chewed.
- ▶ Apply nicotine patches on lean, non-hairy areas.
- ▶ Don't apply patches in the same place; rotate them around different sites.<sup>21</sup>
- ▶ Some smokers will benefit from reminders to use their nicotine replacement.
- ▶ Combining NRT with counselling/support increases success.<sup>22</sup>

## ▶ Safety and side effects

Note: detailed information about safety and side effects is provided in nicotine replacement therapy information leaflets provided with NRT products. Manufacturers can also be contacted for further information.

### Is Nicotine Replacement Therapy safe?

- ▶ A recent review of 120 studies of NRT concluded that: "NRT is associated with adverse effects that may be discomforting for the patient but are not life threatening".<sup>23</sup>
- ▶ NRT is a very safe product for nearly every user, which is why it is available over the counter in supermarkets and other retailers rather than being on prescription.<sup>2,24</sup>
- ▶ According to the Royal College of Physicians, NRT is "many orders of magnitude safer than smoking".<sup>25</sup>
- ▶ The main problem with nicotine is that it is addictive, so in order to get their nicotine dose people keep breathing in tobacco smoke, which is highly toxic.<sup>3</sup>
- ▶ Nicotine is not a major risk factor for heart disease.<sup>3</sup>
- ▶ Nicotine is not directly carcinogenic.<sup>26</sup>

The main area of concern about nicotine is that it might act as a promoter of cancerous cell changes.<sup>26</sup> Recent research has suggested that genetic mutations in the mouth can be worsened by nicotine levels found in quit smoking products.<sup>27</sup> Cancer Council Australia commented on the research, noting:

- ▶ Any risk would be far less than smoking.
- ▶ Only people with a particular gene associated with cancers of the mouth would be at risk.
- ▶ Any risks would be with long-term use of oral NRT.
- ▶ If people use oral NRT they should limit use to six months.
- ▶ There are alternatives to oral products, such as nicotine patches.<sup>28</sup>

Many smokers greatly overestimate the risks of NRT compared to smoking.<sup>16</sup> Cigarettes contain 69 identified cancer-causing substances.<sup>29</sup> The overestimation of the risks of NRT is partly due to not understanding that tobacco smoke is very much more risky than nicotine alone.<sup>16</sup> Another reason may be that because NRT is a medicine it comes with lots of detailed information about side effects, whereas cigarettes don't.<sup>30</sup>

### What are the main side effects of NRT?

Side effects are generally mild and in the local area where the NRT is being used: the mouth (oral types) or skin (patch).<sup>16,25</sup> A recent review of studies of NRT concluded that the main side effects of NRT are:

- ▶ heart palpitations/chest pains
- ▶ nausea/vomiting (oral products only)
- ▶ indigestion or gastrointestinal complaints (higher risk with oral products)
- ▶ insomnia (patch)
- ▶ skin irritation (patch)
- ▶ mouth and throat soreness (oral products)
- ▶ mouth ulcers (oral products)
- ▶ hiccups (oral products)
- ▶ coughing (oral products).<sup>23</sup>

Skin irritation with the patch was the most common side effect, occurring in around 20% of people, followed by insomnia in 11% of people. The heart palpitations and chest pains were not associated with heart attacks or death.<sup>23</sup> All the other side effects were reported at rates of less than 10%, with heart palpitations or chest pains being reported in 3.6% of people.<sup>23</sup>



Significant medical problems due to NRT are extremely rare.<sup>31</sup> Side effects should really be compared to smoking to get a true sense of relative risk.<sup>16</sup> The main side effect of continued smoking in developed countries like Australia is the death of up to two thirds of smokers.<sup>32</sup>

### **What are the solutions for some of the common side effects?**

**Problem:** Vivid dreams when the patch is worn overnight.<sup>21</sup>

**Solution:** Does not usually affect quitting, but if a person doesn't like the dreams they should take off the 24-hour patch at night or switch to a 16-hour patch.<sup>21</sup>

**Problem:** Skin irritation due to the adhesive or nicotine.<sup>21</sup>

**Solution:** Rotation of patch around sites may help, as may hydrocortisone cream.<sup>21</sup>

### **Can you overdose on nicotine replacement?**

Overdose is unlikely when products are used as recommended.<sup>9</sup> Having too much nicotine can lead to nausea, vomiting and dizziness, which can be alleviated by stopping the NRT. Washing down the skin with water only is an option for people using patches.<sup>9</sup>

## **NRT and particular groups**

### **Can under-18s use NRT?**

Yes, NRT is safe for under-18s<sup>9</sup>, but it has not yet been proven to improve quit rates in adolescents. However, it should still be considered for dependent smokers, as it is much safer than smoking.<sup>2,5,24</sup> Counselling is recommended alongside NRT if possible. NRT is not recommended for under-12s.<sup>12</sup>

### **Can you use NRT when you are pregnant?**

Yes. NRT use is better than smoking for pregnant women.<sup>3</sup> However, it is best to quit without NRT if possible.<sup>2,21,24</sup> NRT should be considered for women who are unable to give up without NRT<sup>4</sup> or who don't believe they can quit without NRT.<sup>3</sup> Counselling and support may assist pregnant smokers.<sup>4</sup> An intermittent dose of nicotine, such as the gum, is recommended rather than a continuous dose of nicotine from patches.<sup>4</sup> Patches can be used if a woman is experiencing pregnancy related nausea.<sup>9</sup>








### **Can you use NRT when you are breastfeeding?**

Yes, NRT use whilst breastfeeding is unlikely to be hazardous.<sup>3</sup> NRT use is certainly preferable to smoking whilst breastfeeding.<sup>3</sup> Environmental tobacco smoke is a much greater risk to the baby than NRT.<sup>4</sup>

### **Can people with heart disease use NRT?**

Nicotine replacement is safe for people with stable cardiovascular disease.<sup>3</sup> If a person is hospitalised, supervision by a doctor is recommended if they are using NRT.<sup>9</sup>

### **Are there any issues for people with mental illnesses using NRT?**

-  Nicotine replacement is well tolerated by people with mental illness who want to quit smoking.<sup>17</sup>
-  Research suggests that NRT helps people with mental illnesses to quit smoking.<sup>17</sup>
-  NRT has fewer restrictions on its use for people with mental illness than varenicline (Champix).<sup>33</sup>
-  People with mental illness may prefer more gradual approaches to quitting and may need to use NRT for extended periods.<sup>34</sup>
-  NRT reduces negative moods produced by tobacco withdrawal.<sup>17</sup>
-  NRT itself does not increase depression and anxiety.<sup>23</sup>
-  Overnight nicotine patch use may contribute to insomnia, which can worsen mood.<sup>23</sup>

### **Are there any interactions with other medicines, for example, psychiatric medications?**

If your client takes regular medications for a health condition you should advise them to consult a doctor or a health professional. Some community services also write a letter on the client's behalf to their health professional.

Nicotine does affect insulin, and people with diabetes should monitor their blood sugar more closely and consider consulting a doctor about quitting. Other medications affected by quitting smoking or interactions with nicotine are listed in product information.

Nicotine itself does not interact with psychiatric medications.<sup>35</sup> However, chemicals in tobacco smoke do indirectly affect blood levels of some psychiatric medications, generally lowering the levels.<sup>35</sup> This is because liver activity increases to deal with tobacco smoke toxins, but this increase also has the side effect of processing some medications through the body more quickly.<sup>35</sup>

When people quit smoking this effect can be reversed and blood levels of some medications may change, usually increasing.<sup>35</sup> This does not mean that people taking psychiatric medications should not quit smoking, but that they should be monitored by a medical practitioner to make sure that they are getting the right level of medication.<sup>35</sup> The risks of continued smoking far outweigh the risks of stopping.<sup>35</sup>

### **Are there any other medical reasons not to use NRT?**

Information about particular health conditions affected by NRT products is listed in the consumer information leaflets that come with these products. Anyone with questions about using NRT in relation to health conditions should consult their doctor.

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## **Nicotine Replacement and other methods of quitting**

### **Is NRT the only medication for quitting smoking?**

No. There are two main medicines which require a doctor's prescription: varenicline (brand name Champix) and bupropion (sold under several names but most familiar to smokers under the trade name Zyban).<sup>33</sup>

Both varenicline and bupropion are subsidised by the government under the Pharmaceutical Benefits Scheme (PBS). They are therefore relatively cheap, especially for health care card holders. However, there are restrictions on their use by people with some physical and mental health conditions. This may affect disadvantaged smokers to a greater degree than other smokers.<sup>34,36,37</sup>

### **Do you have to use a medication to quit smoking?**

No, it is not necessary to use a medicine to quit smoking.<sup>38</sup> Most people who quit don't use medications.<sup>38</sup> Increasing the number of quit attempts a person makes seems to be particularly important to quitting.<sup>20</sup>

However, medications will raise people's chances of quitting, and quit rates can be raised further by combining medications with counselling support.<sup>22</sup> Medications are particularly helpful for dependent smokers who smoke within half an hour of waking up, indicating high dependence. However, all smokers may use medications to quit.<sup>22</sup>


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## **Further Information**

### **Where can I get more information?**

Further information is available on information sheets provided with NRT packets. These information sheets also list the phone numbers of manufacturers' enquiry lines.

One useful article available in full text online is:

-  Zwar et al on nicotine myths and facts  
<http://www.atoda.org.au/wp-content/uploads/Nicotine-and-NRT-the-facts-Zwar.pdf>

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