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Al-Manara College of Medical Sciences in Maysan



NICOTINE REPLACEMENTS THERAPY

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بِسْمِ اللَّهِ الرَّحْمَانِ الرَّحِيم

((وَمَن يَتَّقِ اللَّهَ يَجْعَل لَّهُ مَخْرَجًا وَيَرْزُقْهُ مِنْ حَيْثُ لَا يَحْتَسِبُ وَمَن يَتَوَكَّلْ عَلَى اللَّهَ لِكُلِّ شَيْءٍ قَدْرًا)) عَلَى اللَّهِ فَهُوَ حَسْبُهُ إِنَّ اللَّهَ بَالِغُ أَمْرِهِ قَدْ جَعَلَ اللَّهُ لِكُلِّ شَيْءٍ قَدْرًا))

صدق الله العلي العظيم

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Introduction

Nicotine replacement therapy (NRT) is a widely used approach to help individuals quit smoking and manage withdrawal symptoms. Nicotine, a highly addictive substance found in tobacco, is responsible for the addictive nature of smoking. NRT works by delivering nicotine to the body through means other than cigarette smoking. This method allows smokers to control cravings and gradually wean themselves off tobacco.

There are several forms of NRT available, including nicotine patches, gum, lozenges, inhalers, and nasal sprays. Each form has its own benefits and considerations, and the choice depends on the smoker's preferences and needs. The patch, for instance, slowly releases nicotine into the bloodstream throughout the day, providing a constant level of nicotine. On the other hand, gum and lozenges allow users to control nicotine intake and help alleviate oral fixation.

Nicotine replacement therapy is considered an effective tool in smoking cessation. It helps manage withdrawal symptoms such as irritability, anxiety, and cravings, which are commonly experienced when quitting smoking. NRT can also increase the chances of successfully quitting smoking by reducing the intensity of cravings.

Although NRT can be beneficial, it is important to note that it is not a standalone solution. Combining NRT with behavioral therapy, counseling, and support from healthcare professionals or support groups can significantly improve the chances of quitting. Moreover, it is essential to follow the recommended dosage and usage instructions to ensure effectiveness and safety.

Q/ What is 'passive smoking'?

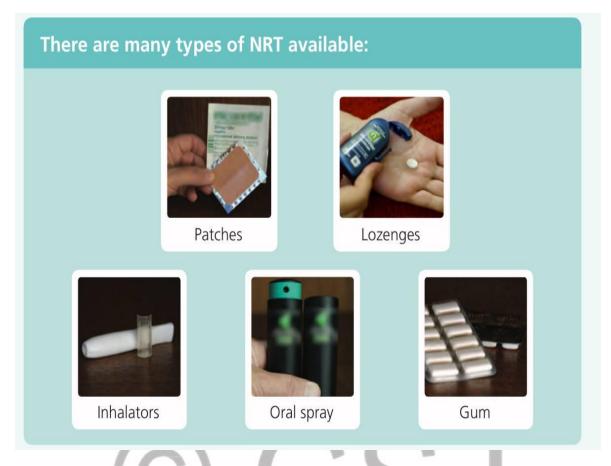
It's well known that people who smoke are at high risk of getting serious illnesses, like respiratory disease, heart disease and cancer.

But we know that non-smokers can also get these health problems due to breathing in tobacco smoke (and that they are much more likely to get these problems than those not breathing in tobacco smoke).

Do you regularly have to walk through a wall of smoke to get into a pub or restaurant due to a crowd smoking outside? Or do you live with a smoker? Or do you sit in a car with someone who smokes? Or are you ever a visitor to a house where people smoke?

If you can say 'yes' to any of these, then chances are you are breathing in other people's smoke, even if you can't actually see or smell the smoke. This is called passive smoking. And it can cause serious health problems





NRT CAN BE USED AS:

1. SINGLE THERAPY:

One type of NRT is used to cut down and quit tobacco.

OR

2. COMBINED THERAPY:

Two or more types of NRT are used to cut down and quit tobacco.

NOTE:

- 1. When using NRT it is important to remember to use the recommended **daily amount** to avoid nicotine withdrawal symptoms.
- 2. TOP TIP: Using NRT can DOUBLE your chances of quitting

1. Nicotine Patches

HOW DO NICOTINE PATCHES WORK?

Nicotine patches are like band aids applied to the skin each day. The patch provides a continual level of nicotine during the day, about a third as much nicotine as most people get from smoking. Patches deliver nicotine more slowly than other NRT products and are known as slow release NRT.

Patches can be used by themselves or in combination with short acting or intermittent NRT such as spray, gum, lozenges or inhalator.

POSSIBLE SIDE EFFECTS

Some people may experience skin irritation, or itching, which usually goes away within one hour.

For some people, sleep disturbances can occur if the patches are worn overnight. Sometimes this is relieved by taking the patch off at night. Sleep problems can also be caused by nicotine withdrawal.

Although uncommon, some people may experience neuralgia (nerve pain). If this happens, cut the patch in half. If symptoms persist, take the patch off and speak to a health professional.

How to use patches

- 1. Apply daily at the same time each day.
- 2. Place the patch on a non-hairy, clean, dry area of skin above the waist (front or back) or upper part of the arm.
- 3. When changing a patch, always place the new patch on a different place on the body.

NOTE: Pregnant or breastfeeding women should **ALWAYS** remove patches at night



How many patches can be used each day?

Generally most people use one patch a day. However for some heavy smokers they may require two patches a day.

TIPS FOR USING PATCHES:

- 1. Patches can be put on just before going to sleep. This means that on waking, nicotine levels will be raised and this will decrease the cravings for a cigarette first thing in the morning
- 2. Patches should not be put on burnt, cut or irritated skin
- 3. Having a shower of bath is OK when wearing a patch
- 4. Perfumed soaps or skin lotions should be avoided on the area where the patch will go as this can stop the patch from sticking
- 5. If a patch does fall off, it can be taped back onto the skin or the patch can be placed on top of the foot and socks/shoes will help keep it in place
- 6. Always dispose of nicotine products carefully. Nicotine products are only to be used by people addicted to nicotine, and could harm children and pets

2. nicotine lozenges

HOW DO LOZENGES WORK?

When nicotine lozenges are placed in the mouth, nicotine is released slowly and is absorbed through the lining of the mouth. This takes

approximately 15 to 20 minutes. Lozenges can be used by themselves or in combination with patches.

There are many different types and sizes of nicotine lozenges available. Some types of lozenge currently available are: 1.5mg, 2mg and 4mg lozenges

POSSIBLE SIDE EFFECTS

Swallowing nicotine can cause stomach upset, hiccups, dizziness, nausea, vomiting, heartburn or a sore mouth

How to use the 1.5mg, 2mg and 4mg lozenge - single therapy?

- 1. Place the lozenge in the mouth and rest between the inside of the cheek and gum. The lozenge can also be placed under the tongue.
- 2. Move the lozenge from side to side in the mouth until dissolved. The lozenge takes approximately 15-20 minutes to dissolve.

How to use the lozenge - combination therapy?

When using patches plus lozenges (combination therapy) to 'top-up' nicotine levels, the lozenge is used the same way as in single therapy. When using combination therapy, the number of lozenges required to reduce cravings will vary. Use up to the recommended dose. If cravings persist speak to a Health Professional.

How to use the 1.5mg, 2mg and 4mg lozenge - single therapy

- 1. Place the lozenge in the mouth and rest between the inside of the cheek and gum. The lozenge can also be placed under the tongue.
- 2. Move the lozenge from side to side in the mouth until dissolved. The lozenge takes approximately 15-20 minutes to dissolve.

How to use the lozenge - combination therapy

When using patches plus lozenges (combination therapy) to 'top-up' nicotine levels, the lozenge is used the same way as in single therapy. When using combination therapy, the number of lozenges required to reduce cravings will vary. Use up to the recommended dose. If cravings persist speak to a Health Professional

1.5mg Mini Lozenge

HOW DO 1.5mg MINI LOZENGES WORK?

1.5mg Mini lozenges can be used by smokers with low nicotine dependence. Smokers who have their first cigarette more than 30 minutes after waking or smoke less than 10 cigarettes per day.

POSSIBLE SIDE EFFECTS

Swallowing nicotine can cause stomach upset, hiccups, dizziness, nausea, vomiting, or diarrhoea. For some people, over using the mini lozenge can cause weakness, cold sweats, hearing problems, confusion and blurred vision.

TIPS FOR USING LOZENGES

- 1. The lozenge should not be chewed or swallowed whole
- 2. Do not eat or drink while the lozenge is in the mouth
- 3. Wait 10 -15 minutes after having the lozenge before eating or drinking

How many 1.5mg Mini lozenges can be used each day?

- a. SINGLE THERAPY: Up to 20 of the 1.5mg Mini lozenges a day.
- **b. COMBINATION THERAPY:** If combining the Mini lozenge 1.5mg with another type of NRT (combination therapy), use up to 12 lozenges per day. Use lozenges when needed. When using lozenges in combination therapy, the number of lozenges required to reduce cravings will vary. Use up to the recommended dose or contact a Health Professional if cravings persist.

4mg Mini Lozenge

HOW DO 4mg MINI LOZENGES WORK?

4mg Mini lozenges can be used by smokers with higher nicotine dependence. Smokers who have their first cigarette **within** 30 minutes of waking or those who smoke **more than** 10 cigarettes per day. If a person does not normally smoke within the first 30 minutes of waking, they may be less dependent on nicotine and should consider using the 1.5mg lozenge.

POSSIBLE SIDE EFFECTS

Swallowing nicotine can cause stomach upset, hiccups, dizziness, nausea, vomiting, or diarrhoea. For some people, over using the mini

lozenge can cause weakness, cold sweats, hearing problems, confusion and blurred vision.

TIPS FOR USING LOZENGES

- 1. The lozenge should not be chewed or swallowed whole
- 2. Do not eat or drink while the lozenge is in the mouth
- 3. Wait 10 -15 minutes after having the lozenge before eating or drinking

How many 4mg Mini lozenges can be used each day?

- a. SINGLE THERAPY: Up to 15 of the 4mg Mini lozenges a day.
- **b. COMBINATION THERAPY:** It is not recommended to combine 4mg Mini lozenges with patches. The 4mg lozenge is generally used as a single therapy. However, if a person is a heavy smoker and they continue to have cravings speak to a Health Professional for further advice and support.

2mg Lozenge

HOW DO 2mg LOZENGES WORK?

2mg lozenge can be used by smokers with low nicotine dependence. Smokers who have their first cigarette **more than** 30 minutes after waking or smoke **less than** 10 cigarettes per day. The lozenge dissolves completely within about 20 minutes.

POSSIBLE SIDE EFFECTS

Swallowing nicotine can cause stomach upset, hiccups, dizziness, nausea, vomiting, heartburn or a sore mouth.

TIPS FOR USING LOZENGES

1. The lozenge should not be chewed or swallowed whole

- 2. Do not eat or drink while the lozenge is in the mouth
- 3. Wait 10 -15 minutes after having the lozenge before eating or drinking

How many 2mg lozenges can be used each day?

How many 2mg lozenges a person can have each day depends on whether they are using the lozenge 2mg as single or combination therapy.

- a. SINGLE THERAPY: Up to 15 of the 2mg lozenges per day.
- **b. COMBINATION THERAPY:** If a person is combining the 2mg lozenge with the nicotine patch, they can use up to **12** lozenges a day. If cravings persist speak to a Health Professional.

4mg Lozenge

HOW DO 4mg LOZENGES WORK?

4mg lozenges can be used by smokers with higher nicotine dependence. Smokers who have their first cigarette **within** 30 minutes of waking or those who smoke **more than** 10 cigarettes per day.

If a person does not normally smoke within the first 30 minutes of waking, they may be less dependent on nicotine and should consider using the 2mg lozenge.

POSSIBLE SIDE EFFECTS

Swallowing nicotine can cause stomach upset, hiccups, dizziness, nausea, vomiting, heartburn or a sore mouth.

TIPS FOR USING LOZENGES

- 1. Do not chew the lozenge or swallow whole. Let the lozenge dissolve in the mouth
- 2. Do not eat or drink while the lozenge is in the mouth
- 3. Wait 10 -15 minutes after having the lozenge before eating or drinking

How many 4mg lozenges can be used each day?

- a. SINGLE THERAPY: Up to 15 of the 4mg lozenges a day.
- **b. COMBINATION THERAPY:** It is not recommended to combine 4mg lozenge with patches. The 4mg lozenge is generally used as a single therapy. However, for a heavy smoker who continues to have cravings speak to a Health Professional for further advice and support.



HOW DOES NICOTINE GUM WORK?

Nicotine gum allows nicotine to be absorbed through the lining of the mouth. Nicotine gum comes in 2mg and 4mg strengths. Gum is chewed only until taste occurs. This chewing releases the nicotine.

If a person smokes within 30 minutes of waking, this indicates they are highly nicotine dependent, and should use the 4mg gum. If a person does not normally smoke within 30 minutes of waking, they may be less dependent and should use the 2mg gum.

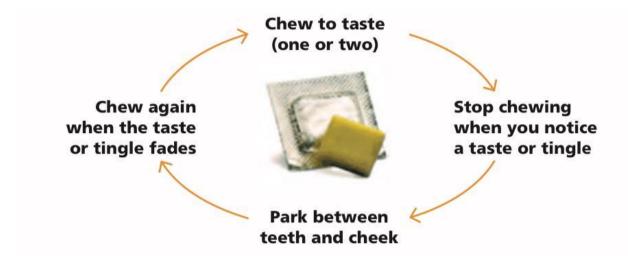
POSSIBLE SIDE EFFECTS

If the gum is chewed too often it can result in the released nicotine being swallowed and this can upset the stomach. Symptoms include nausea, hiccups and occasional headache. Jaw pain and dental problems can also occur.



How to use nicotine gum

- 1. Place one piece of gum inside mouth
- 2. Chew gently until a peppery/mint/fruity flavour can be tasted (taste will depend on type of gum). Do NOT chew like you would chew a piece of regular 'chewing' gum.
- 3. Using your tongue, flatten and 'park' the gum against the inside of the cheek until the taste disappears.
- 4. Repeat this cycle for up to 20mins (i.e. Chew to taste again, then park).
- 5. Dispose of gum when the taste is gone.



TIPS FOR USING NICOTINE GUM

- 1. People who wear dentures should not use gum (unless they remove the denture)
- 2. Do not eat or drink while the gum is in the mouth, and do not eat or drink for 10 15 minutes after using the gum
- 3. It is advised that people start using gum immediately after they wake up and continue to use throughout the day
- 4. Always dispose of nicotine products carefully. Nicotine products are only to be used by people addicted to nicotine, and could harm children and pets

How many pieces of gum can be used each day?

a. SINGLE THERAPY: Use between **8-12 pieces** of gum per day or a fixed dose such as one piece per hour as the gum is more effective if used regularly.

B. COMBINATION THERAPY: Gum can be used in combination therapy to 'top- up' nicotine levels. Gum is to be used when cravings persist. When using gum in combination therapy, the number of pieces required to reduce cravings will vary. Use up to the recommended dose and contact a Health Professional if cravings persist.

4. Mouth Spray

Mouth sprays deliver nicotine using a spray dispenser. At the first sign of cravings or at the time a person would have a cigarette, one or two sprays of mouth spray will lessen the craving. Mouth sprays are the fastest acting NRT.

POSSIBLE SIDE EFFECTS

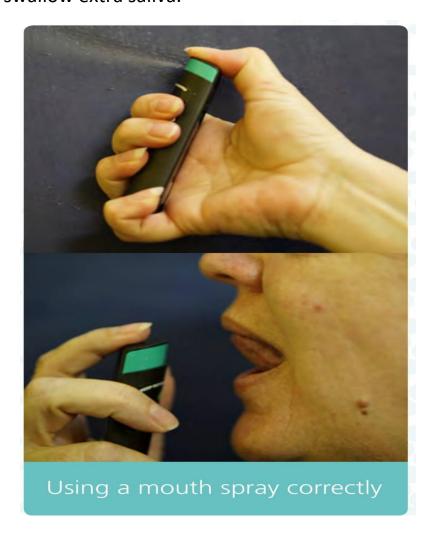
Nausea, vomiting, tingling or burning sensation at the back of the throat or hiccups may be experienced. Sometimes the spray causes lots of saliva (or 'spit') - keep spray in the mouth as long as you can then spit excess into a tissue. After four or five times of doing this you won't have to spit out every time.

TO OPEN OR CLOSE THE MOUTH SPRAY

- 1. For best delivery, always prime the spray before use
- 2. With your thumb, push on the black button until it can be pushed slightly inwards.
- 3. Do NOT push too hard. While pushing in, slide slightly down before sliding upwards to unlock the top of the dispenser and release the button.
- 4. To close, follow the same instructions, but while pushing in slide downwards.

HOW TO USE MOUTH SPRAY

- 1. Press the top of the mouth spray dispenser to release one spray into the side of the cheek or under the tongue, being sure to avoid the lips. DO NOT SPRAY DIRECTLY INTO THE THROAT
- 2. To avoid getting spray down your throat, do not breathe in while spraying.
- 3. If the spray causes excessive saliva, hold in the mouth for as long as possible, then spit extra saliva into a tissue. After 4-5 times it won't be necessary to spit each time.
- 4. **DO NOT** swallow extra saliva.



TIPS FOR USING MOUTH SPRAY

- 1. Do not eat or drink for 10-15 minutes after using the mouth spray
- 2. If being used for the first time, or if the spray has not been used for a few hours, the spray pump should be primed
- 3. You may feel some tingling in the mouth when you first use the spray or an increased amount of saliva this is ok

TO PRIME THE SPRAY:

- 1. Point the spray away from you and shake.
- 2. Open the spray.
- 3. Press the top of the dispenser several times until a fine mist appears. This will ensure the correct dosage.

How many sprays can a person have each day?

- **a. SINGLE THERAPY:** Up to **4** sprays per hour—maximum **64** sprays per day.
- **b. COMBINATION THERAPY**: Mouth spray can be used with patches to 'top up' nicotine levels. Spray is used when needed. A maximum of **64** sprays per day can be used.



5. Inhalator

HOW DO INHALATORS WORK?

The inhalator consists of a plastic mouthpiece and a cartridge that is put together before use (as per instructions on the side of the pack). Each inhalator cartridge contains 15mg of nicotine.

The inhalator releases nicotine into your mouth when you 'sip' through the inhalator. The nicotine is only absorbed through the **lining of your mouth.**

POSSIBLE SIDE EFFECTS

'Overuse' or 'inhaling too deeply' with the inhalator may cause coughing, nausea, pain in the abdomen, sweating, diarrhoea, headache, dizziness, hearing disturbance or weakness.

HOW TO USE THE INHALATOR

- 1. Take a shallow puff/sip about every 2 seconds and hold in the mouth. Alternatively take up to a maximum of 4 puffs/sips per minute. Shallow puffs/sips will help to increase the amount of nicotine that is absorbed through the lining of the cheeks. Try not to draw back on the inhalator as this will give you a sore throat.
- 2. When the taste fades, this indicates that the cartridge is empty.
- 3. Each cartridge supplies up to 20-30 mins of gentle puffs/sips.
- 4. Each cartridge will remain active for 12 hours if not used.

TIPS FOR USING THE INHALATOR

- 1. The mouthpiece should be rinsed with warm soapy water and dried thoroughly several times per week
- 2. Do not eat or drink while using the inhalator
- 3. Do not eat or drink for 10–15 minutes after using the inhalator
- 4. Always dispose of nicotine products carefully. Nicotine products are only to be used by people addicted to nicotine, and could harm children and pets

How many cartridges can a person use each day?

- a. SINGLE THERAPY: Up to 6 cartridges per day.
- **b. COMBINATION THERAPY:** If a person is on patches and using the inhalator to 'top-up' the nicotine level, **6** cartridges can be used each day. If cravings persist, contact a Health Professional.

Patient Compliance with NRT

Most of NRT users discontinue treatment prematurely. Misinformation about NRT is a common cause of poor compliance.

Several causes of poor compliance with NRT identified; Concerns about

- 1. safety
- 2. addictiveness of NRT
- 3. Lack of confidence in efficacy,
- 4. Side effects, Cost, Relapse
- 5. Should be able to quit on my own'

When craving and withdrawal are well controlled via treatment, patients may mistakenly assume that the treatment is no longer necessary

((These beliefs undermine the effectiveness of NRT))

This can be **tackled** majorly by **providing** scientific information by **health professionals to the patients undergoing NRT**

Supporting smoking cessation during pregnancy- nicotine replacement therapy (NRT)

Can NRT be used in pregnancy?

Yes, it is safe to use NRT in pregnancy. Using NRT is safer than smoking because it doesn't contain poisons such as tar or carbon monoxide, but does provide you with some nicotine to help you manage any withdrawal cravings once you have stopped smoking. NRT can help you

successfully stop smoking in pregnancy and reduce the risk of miscarriage, stillbirth, poor growth and development, birth defects, premature birth, birth complications and much more.

Optimising nicotine replacement therapy in clinical practice

Name: ali Ahmed

Background: In spite of an established safety and efficacy record, nicotine replacement therapy (NRT) is frequently used incorrectly, suboptimally, or not at all.

Objective: This article reviews practical evidence based strategies to optimise the use of NRT in clinical practice. The increasing role of combination therapies is explored and strategies to prevent relapse using NRT are examined.

Discussion: Misguided concerns about safety and efficacy undermine the use of NRT and should be addressed proactively with accurate information. It is also vital to give detailed instructions for the correct use of NRT products and to use an adequate dose to relieve symptoms.

Quit rates can be increased further, by starting the nicotine patch 2 weeks before quitting, combining a patch with an oral form of NRT (such as gum or lozenges) and continuing to wear the patch after a lapse. Oral forms of NRT relieve cue induced cravings and this may help prevent relapse.

A. Patient Compliance with NRT

- **B. Correct usage of oral NRT**: The oral, quick acting forms of NRT (lozenges, gum, inhalator, mouth spray) are often used incorrectly, resulting in lower effectiveness and more side effects. It is vital to instruct patients on their correct use and to review their technique at follow up visits
- **C.** Adequate dosing of nicotine: In general, patients using NRT receive too little nicotine, partly due to misguided concerns about safety.
- **D. Combination therapy:** Combining the nicotine patch with an oral form of NRT (combination therapy) has been shown to increase quit rates by 34–54% compared to using the patch alone.

The patch provides a steady protection against background cravings and the oral forms give quick, flexible relief for breakthrough cravings as a result of smoking triggers, such as the smell of smoke.

E. Pre-cessation use of a nicotine patch: There is evidence to support the use of nicotine patches before smoking cessation, with the Therapeutic Goods Administration licensing an approach of starting a patch 2 weeks before quit day

Conclusion and Recommendations

Conclusion:

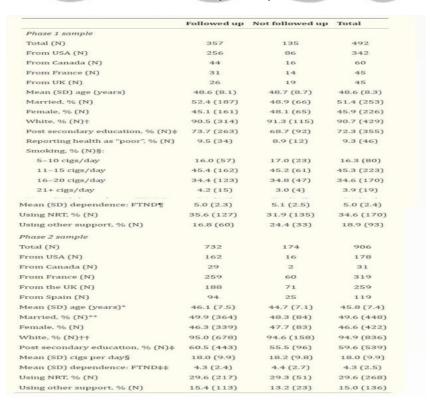
- 1. Nicotine replacement therapy is considered an effective tool in smoking cessation. It is important to note that it is not a standalone solution. Combining NRT with behavioral therapy, counseling, and support from healthcare professionals or support groups can significantly improve the chances of quitting
- 2. The availability of different types of dosage forms for NRT leads to easy patient complice
- 3. Incorrect use for NRT may lead to non-compliance with treatment
- 4. NRT is not free of side effects

Recommendations:

- 1. We note the lack of availability of pharmaceutical forms of NRT inside Iraq compared to the rest of the countries, so we are keen to provide various pharmaceutical forms in pharmacies
- 2. Developing the pharmacy has the correct use of the Internet by conducting a training course.
- 3. Most smokers have no idea about the availability of NRT, so advertisements must be made announcing the existence of alternative solutions to smoking
- 4. The government limits the availability of cigarettes and other means of smoking by imposing double customs duties that lead to an increase in the price of cigarettes.

The ATTEMPT study

- 1. The ATTEMPT study is a longitudinal cohort study conducted online every 3 months with smokers aged 35-65 who smoke at least 5 cigarettes per day and intend to quit in the next 3 months.
- 2. Phase 1 started in 2003 in Canada, France, UK and US with 2009 smokers. Phase 2 added 3645 more smokers from those countries plus Spain in 2004.
- 3. At the 3-month follow up, participants were asked if they made a serious quit attempt lasting 24 hours in the past 3 months.
- 4. In phase 1, 578 reported a quit attempt and 214 used NRT. In phase 2, 983 reported a quit attempt and 308 used NRT.
- 5. The study examined the short and medium term health effects of stopping smoking and factors linked to quit success or failure.
- 6. The goal was to assess if any NRT effect could be explained by motivation to use support instead of its pharmacological effects.
- 7. Table provides details on the study samples' characteristics.



References

- 1. Stead IF, Perera R, Bullen C, et al. Nicotine replacement therapy for smoking cessation. Cochrane Database Syst Rev 2012, Issue 11. Art. No.: CD000146. DOI: 10.1002/14651858.CD000146.pub4.
- 2. Shiffman S, Ferguson SG, Rohay J, Gitchell JG. Perceived safety and efficacy of nicotine replace- ment therapies among uS smokers and exsmokers: relationship with use and compliance. Addiction 2008;103:1371–8.
- 3. Ferguson SG, Gitchell JG, Shiffman S, Sembower MA, Rohay JM, Allen J. Providing accurate safety information may increase a smoker's willingness to use nicotine replacement therapy as part of a quit attempt. Addict Behav 2011;36:713–6.
- 4. Beard E, McDermott M, McEwen A, West R. Beliefs of stop smoking practitioners in united Kingdom on the use of nicotine replacement therapy for smoking reduction. Nicotine Tob Res 2012;14:639–47.
- 5. Coleman T, Chamberlain C, Cooper S, leonardi-Bee J. Efficacy and safety of nicotine replacement therapy for smoking cessation in pregnancy: systematic review and meta-analysis. Addiction 2011;106:52–61.
- 6. Prochaska JJ. Nicotine Replacement Therapy as a Maintenance Treatment. JAMA.2015 Aug 18;314(7):718-9.

