

# Treatment of tobacco addiction

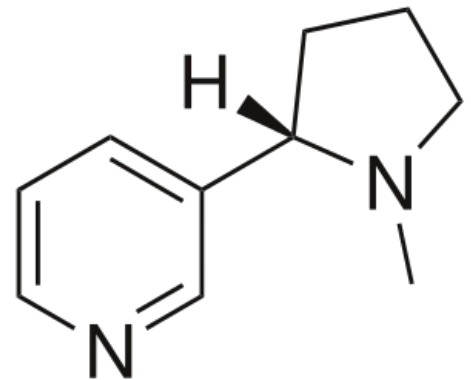
Nicotine addiction is a **chronic disease**. The degree of nicotine dependence is important data not only for estimating the severity of withdrawal symptoms and the success of therapy, but mainly for the indication and doses of **nicotine replacement therapy (NTN)**. A good criterion for assessing success is long-term (optimally after a year) absolute and verified abstinence. Readaptation of acetylcholine receptors after smoking cessation can take more than a year in addicted smokers. We find out **whether a person is addicted to nicotine by asking 2 key questions:**

- how many cigarettes he smokes per day;
- how early in the morning after waking up he has to light up (he slept at night, he didn't have the drug and the earlier he has to light up, the more addicted he is).

There is a questionnaire that quantifies this dependence by points - **the Fagerström nicotine dependence test**.

## Mechanism of action of nicotine

Nicotine binds to **acetylcholine receptors** in the brain, which is why it acts as a **sympathomimetic and parasympathomimetic agent** (a smaller dose causes concentration, a larger dose induces relaxation). Dopamine is released, resulting in higher secretion of catecholamines, serotonin, corticosteroids, pituitary hormones and B-endorphin. There are also specific nicotine receptors in the brain - in an addicted smoker, their number increases and is then one of the causes of withdrawal symptoms. In addition, smokers have reduced levels of **monoamine oxidase B** (by about 40%), which explains the psychiatric comorbidity and the fact that smoking is a gateway to other drugs.



## Definition of withdrawal symptoms

- Physical and mental changes due to the reduction or interruption of drug intake,
- usually temporary,
- they are the result of physical or psychological adaptation to long-term drug intake.

**Examples:** insomnia, depression, increased appetite (mechanical principle), nicotine - slowed gastric emptying, faster motility, faster basal metabolism, weight gain (4 kg/year), irritation, anger, nervousness, difficulty concentrating, urge to smoke.

## Smoking cessation methods

### Motivation

The most important thing is the patient's decision. **The 5R Method** is used.<sup>[1]</sup>

- **Relevance** - *find motivation relevant to health status, family and social situation, age, gender, education, etc.*
- **Risks** - *discuss the potential risks of smoking.*
- **Rewards** - *improved health, saving money, feeling better about yourself, healthier children, getting rid of bad breath.*
- **Road blocks** - *identification of possible obstacles (e.g. fear of failure, insufficient support from the environment).*
- **Repetition** - *repeating the motivational intervention as needed.*



### Nicotine replacement therapy

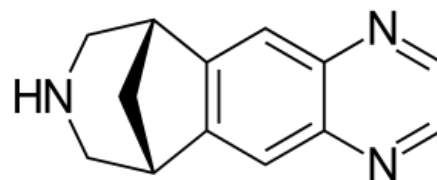
It is not a medicine, it is based on the principle of suppressing withdrawal symptoms by **an alternative supply** of nicotine.

It is served in the form of:

- *chewing gum* (4 mg of nicotine, for heavy addicts, corresponds to more than 20 cigarettes/day);
- *patches* (a basic dose is enough for all but light smokers for at least 8-12 weeks);
- *nicotine inhaler* (plastic tip into which nicotine capsules are inserted, which open after closing the tip from both sides and the smoker can inhale nicotine);
- *nicotine nasal spray* (with 1 application, 0.5 mg of NTN is released, i.e. 1 mg when applied to both holes).

## Pharmacotherapy of tobacco dependence

- **Preparation Champix® - varenicline:**
  - **partial agonist of alpha-4/Beta-2 acetylcholine nicotinic receptors**<sup>[2]</sup>.
  - More suitable for stronger addiction.
  - Agonistic and antagonistic effects - It binds to the receptor, ion channels open, ions enter the neuron and the signal causes dopamine to be flushed out, just like after smoking a cigarette - effect within **hours**.
  - So the nicotine from the cigarette no longer binds to the relevant receptor - the receptor occupied by **varenicline**.
  - *Patients no longer need to smoke as much, cigarettes do not taste good to them.*



## Method 5A - minimal intervention method

- **Ask** – ask about smoking: always at the 1st visit, for smokers at every check-up, for children ask about smoking at home.
- **Advice** – give advice to quit: praise the non-smoker, remind the smoker of the need to quit.
- **Assess** – assess willingness to quit.
- **Assist** – help to quit, set the D-day when the patient stops smoking. Give advice on how to overcome the situations when he most often smoked, without a cigarette. Offer dependent patients an alternative substitute for NTN.
- **Arrange follow up** – plan follow-up visits: mainly in the first weeks after D-day. The average critical relapse time is 3 months. The optimal follow-up period is 3-6 months.
- There is one more A for children – **Anticipate** – anticipate risk factors, intervene in time.

It is always important to stop at any age. In 24 hours, the risk of cardiovascular diseases is 30% lower, the endothelium is restored, and this does not change for about a year, in 5 years the risk is halved, **after 10 years it is almost comparable to a non-smoker**.

## Weaning method using virtual reality

Part of the therapy in the treatment of tobacco addiction is gradual desensitization and training of reactions in risky situations. As part of therapy, patients learn to resist provocative stimuli - in this case, the taste and smell of tobacco or cigarette smoke.

## Links

## Related Articles

- WikiSkripta. *Tabák* [online]. [cit. online]. <<https://www.wikiskripta.eu/w/Tab%C3%A1k>>.
- WikiSkripta. *Zplodiny kouření* [online]. [cit. online]. <[https://www.wikiskripta.eu/w/Zplodiny\\_kou%C5%99en%C3%AD](https://www.wikiskripta.eu/w/Zplodiny_kou%C5%99en%C3%AD)>.
- WikiSkripta. *Prevence závislosti na tabáku* [online]. [cit. online]. <[https://www.wikiskripta.eu/w/Prevence\\_z%C3%A1vislosti\\_na\\_tab%C3%A1ku](https://www.wikiskripta.eu/w/Prevence_z%C3%A1vislosti_na_tab%C3%A1ku)>.

## References

FIORE, Michael C. – BAILEY, William C. – COHEN, Stuart J., et al. *Treating Tobacco Use and Dependence (Clinical Practice Guideline)*. 1.. edition. 2000. ISBN 9781587630071.

XIAO, Dan – CHU, Shuilian – WANG, Chen. Smoking cessation in Asians: focus on varenicline. Patient Preference Adherence. *National Library of Medicine*. 2015, vol. 9, p. 579-84 s., ISSN 1177-889X.

1. FIORE, Michael C. – BAILEY, William C. – COHEN, Stuart J., et al. *Treating Tobacco Use and Dependence (Clinical Practice Guideline)* [online]. 1. edition. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, 2000. Available from <<http://www.surgeongeneral.gov/tobacco/index.html>>. ISBN 9781587630071.
2. XIAO, Dan – CHU, Shuilian – WANG, Chen. Smoking cessation in Asians: focus on varenicline. *Patient Preference Adherence* [online]. 2015, vol. 9, p. 579-84, Available from <<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4403695/?tool=pubmed>>. ISSN 1177-889X.

## Used literature

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