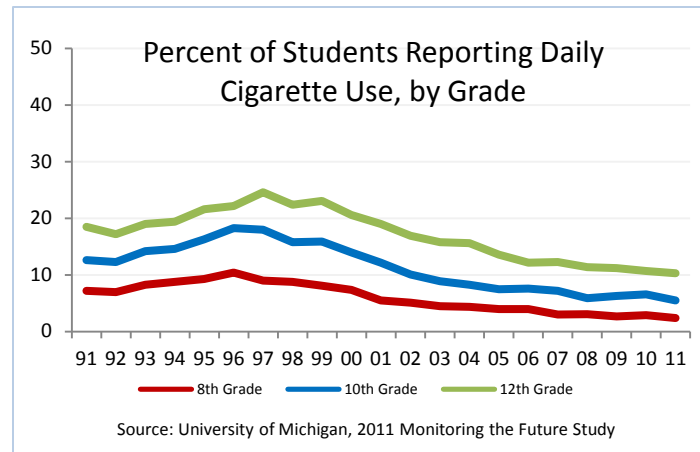


Tobacco Addiction – June, 2012

A Research Update from the National Institute on Drug Abuse

According to the Centers for Disease Control and Prevention, there has been a 50 percent decline in the number of smokers since 1965.

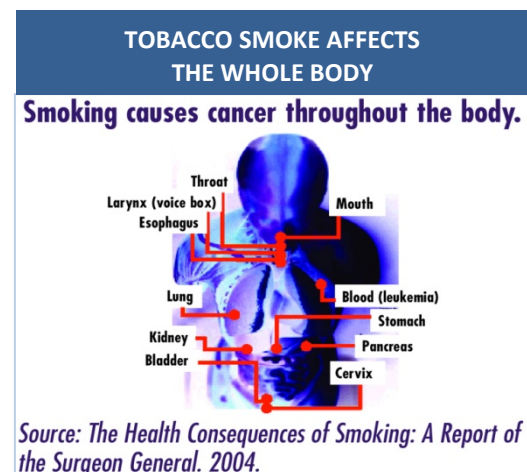
- Still, in 2011, 6.1 percent of 8th graders, 11.8 percent of 10th graders, and 18.7 percent of 12th graders reported smoking cigarettes in the 30 days prior to being surveyed; and 2.4 percent, 5.5 percent, and 10.3 percent of 8th, 10th, and 12th graders, respectively, were daily smokers (figure; MTF, 2011).
- In 2010, almost 70 million Americans aged 12 or older reported current use of tobacco in 2010 (NSDUH, 2011):
 - 58.3 million smoked cigarettes, 13.2 million smoked cigars, 2.2 million smoked pipes, and 8.9 million used smokeless tobacco
 - Women represent almost 28 million of the current tobacco users
- Although tobacco use has declined among the general population, this is not the case for patients with mental illnesses, where use remains high—smoking among patients with schizophrenia is as high as 90 percent.



Nearly 90 percent of smokers start smoking by age 18. For those who start before 18 years of age, more than 6 million will die prematurely from a smoking-related disease.

Cigarette smoking kills an estimated 440,000 U.S. citizens each year.

- Since 1964, more than 12 million Americans have died prematurely from smoking, and another 25 million U.S. smokers alive today will most likely die of a smoking-related illness.
- Smoking accounts for about one-third of all cancer deaths.
- Smoking causes other lung diseases such as chronic bronchitis and emphysema, exacerbates asthma symptoms and substantially increases the risk of heart disease, including stroke, heart attack, vascular disease, and aneurysm.
- Passive or secondary smoke also increases the risk for many diseases—approximately 3,400 lung cancer deaths and 46,000 deaths from coronary heart disease occur per year among exposed nonsmokers.



What Makes Tobacco Addictive?

NIDA-supported research identified nicotine as the main addictive ingredient in tobacco. Nicotine activates reward pathways in the brain and increases levels of dopamine—a key chemical behind the desire to consume drugs.

But nicotine may not be the only psychoactive ingredient in tobacco. Animal research shows that acetaldehyde, another chemical constituent of tobacco smoke, dramatically increases the rewarding properties of nicotine. This effect may be age-related, with adolescent animals displaying far more sensitivity to it than adults. It may also be a reason why adolescents are more vulnerable to becoming addicted to tobacco than adults.

Smoking and Women

Smoking plays a major role in morbidity and mortality among women. Lung cancer is the leading cause of cancer death among women, surpassing breast cancer in the late 1980s. In 2012, almost 73,000 women are expected to die from lung cancer and an estimated 110,000 women will be newly diagnosed with the disease.

Women who smoke are at higher risk for other cancers as well, including liver and colorectal cancer. They are also at higher risk for infertility, early menopause, and lower bone density and hip fracture after menopause.

It's alarming that roughly 1 in 6 pregnant women aged 15 to 44 were regular smokers in 2010. Women who smoke during pregnancy subject themselves and their unborn children to risks including complications during pregnancy, premature delivery, low birth weight, stillbirth and sudden infant death syndrome (SIDS), as well as compromised fetal growth and development.



Treatments for Tobacco Addiction

Quitting smoking can greatly reduce a person's risk of smoking-related diseases and premature death. While the relative health benefits are greater for people who stop smoking at earlier ages, smoking cessation is beneficial at any age. Some smokers can quit on their own; however many need assistance. Research has shown that treatments for tobacco addiction can help. Unfortunately, even with treatment, long term quit rates are often disappointing – most smokers relapse within 6 months. Thus, relapse prevention remains the priority for tobacco cessation research.

Medications

Nicotine replacement therapies (NRTs), such as nicotine gum, lozenge, and the transdermal nicotine patch, can be used (in conjunction with behavioral support) to relieve withdrawal symptoms—they generally provide users with lower overall nicotine levels than tobacco and thus have little abuse potential. NRTs also do not expose the lungs to carcinogens and gases associated with tobacco smoke.

Other medications include:

- Bupropion (Zyban), an antidepressant, which was approved by the FDA in 1997 to help people quit smoking.
- Varenicline tartrate (Chantix), which acts at the sites in the brain affected by nicotine, and may help people quit by easing withdrawal symptoms and blocking the effects of nicotine if people resume smoking.

On the Horizon:

- A Nicotine Vaccine: Expected to prevent relapse by stimulating the body to produce antibodies against nicotine, binding it while it's still in the bloodstream and preventing it from entering the brain and exerting its rewarding effects.
- New Medication Targets: Advances in genetics research are suggesting new targets for medications development. For example, a cluster of nicotinic acetylcholine receptor genes on chromosome 15 has been linked to nicotine dependence, with the $\alpha 5$ receptor gene shown to affect nicotine withdrawal, a major trigger of smoking relapse.

Behavioral Treatments

Behavioral interventions play an integral role in smoking cessation, either in conjunction with medication or alone. They employ various methods to assist smokers in quitting, ranging from self-help materials to individual cognitive-behavioral therapy. These interventions teach individuals to recognize high-risk smoking situations, develop new coping strategies, manage stress, improve problem solving skills, and increase social support. To make behavioral approaches more accessible, researchers have been adapting them for mobile devices and web formats.

For further information please visit NIDA on the web at www.drugabuse.gov or contact:

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