Co-Occurring Disorder-Related Quick Facts:
NICOTINE

Nicotine: Nicotine, a component of tobacco, is the primary reason that tobacco is addictive, although cigarette smoke contains many other dangerous chemicals, including tar, carbon monoxide, acetaldehyde, nitrosamines, and more.[1]

In 1988, the Surgeon General concluded that cigarettes and other forms of tobacco (i.e., cigars, pipes, and chewing tobacco) are addictive, and that nicotine is the drug in tobacco that causes addiction. Nicotine provides an almost immediate "kick" by causing a discharge of epinephrine from the adrenal cortex, which stimulates the central nervous system and endocrine glands.[2] Nicotine changes heart rate, blood pressure, and breathing patterns. Children who are exposed to nicotine could be at a higher risk for certain illnesses such as asthma, and babies could be at risk for sudden infant death syndrome. Mood, memory, and appetite also may be affected in children by exposure to nicotine.

Although nicotine is often portrayed as a stress reducer, it is a stimulant not a suppressant. Nicotine speeds up the heart, constricts blood vessels, and raises blood pressure. Carbon monoxide from the tobacco is absorbed in place of oxygen in the bloodstream. Nicotine can also cause lower estrogen levels in women and is know to be a major source of erectile dysfunction.[3]

Addiction to nicotine can result in withdrawal symptoms, including restlessness, cognitive and attention deficits, irritability, cravings, sleep disturbances, changes in appetite, depression, headaches, and other uncomfortable feelings.[1,2] During cessation of smoking or periods of craving, smokers also may have impairments in a wide range of psychomotor and cognitive functions, such as language comprehension.[2]

Epidemiology: Each year more than 400,000 Americans die as a result of cigarette smoking. One in every five deaths in the United States is smoking-related.[4] An estimated 20.8 percent of all adults (45.3 million people) smoke cigarettes in the United States. The cigarette smoking estimates by age are as follows: 18–24 years (23.9%), 25–44 years (23.5%), 45–64 years (21.8%), and 65 years or older (10.2%).[4] Cigarette smoking is more common among men (23.9%) than women (18.0%),[4] although rates of smoking were similar for males and females ages 12-17.[4] The rate of smokeless tobacco use was significantly higher for men than for women in 1995.[5]

Prevalence varies by race and ethnicity, with the prevalence of the smoking highest among American Indians/Alaska Natives (32.4%), followed by African Americans (23.0%), whites (21.9%), Hispanics (15.2%), and Asians – excluding Native Hawaiians and other Pacific Islanders (10.4%).[4]

Nicotine Addiction and Mental Illness: Several studies find high rates of smoking among persons with mental illness. Persons with nicotine dependent disorder are about twice as likely to suffer from another mental disorder.[6] Similarly, persons who have mental disorders are about twice as likely to smoke as others. Although they comprise an estimated 28 percent of the

population, persons who are mentally ill consume about 44 percent of all cigarettes smoked. Smoking rates are particularly high (75% to 95%) among people with schizophrenia.[7]

Nicotine Addiction and Substance Use: Use of illicit drugs and alcohol is more common among current cigarette smokers than among nonsmokers. Among persons ages 12 or older, 20.4 percent of past-month cigarette smokers reported current use of an illicit drug compared with 4.2 percent of persons who were not current cigarette smokers.[8] Past month alcohol use was reported by 66.3 percent of current cigarette smokers compared with 45.8 percent of those who did not use cigarettes in the past month. The association also was found with binge drinking (43.6% of current cigarette users vs. 16.1% of current nonusers) and heavy drinking (16.0% vs. 3.8%, respectively).[8]

Nicotine Addiction and Homelessness: As many as 75 percent of persons who are homeless smoke, compared to 57 percent in a matched nonhomeless cohort.[9] Because they are more likely to practice high-risk smoking behaviors (e.g., smoking discarded cigarettes, tampering with filters), smokers who are homeless are more susceptible to tobacco-related health complications and infectious diseases.

In a Pittsburgh study of homeless persons receiving medical or social services at nine sites, 69 percent of the homeless clients were current smokers.[10] Reports of tobacco use prevalence rates among homeless persons internationally have ranged from 75 to 85 percent, and are consistent with the high rate of mental illness and substance abuse seen among homeless patients in the United States and elsewhere.[10,11]

Treatment Approaches (Substance Abuse/Mental Health/Trauma/Homelessness):

Pharmacological treatment combined with behavioral treatment (including psychological support and skills training to overcome high-risk situations), results in some of the highest long-term abstinence from smoking rates. Medications used for smoking cessation, such as bupropion and naltrexone, can also attenuate post cessation weight gain and could become additional strategies for enhancing treatment success.[2]

There are also nicotine replacement therapies[1] (NRTs), such as nicotine gum and the transdermal nicotine patch, which were the first pharmacological treatments approved by the Food and Drug Administration (FDA) for use in smoking cessation therapy. NRTs are used (in conjunction with behavioral support) to relieve withdrawal symptoms. An added benefit is that these forms of nicotine have little abuse potential since they do not produce the pleasurable effects of tobacco products—nor do they contain the carcinogens and gases associated with tobacco smoke. Behavioral treatments may enhance the effectiveness of NRTs and improve long-term outcomes.[1]

Pharmacological treatments other than NRTs are being studied. The antidepressant bupropion was approved by the FDA in 1997 to help people quit smoking and is marketed as Zyban. Varenicline tartrate (Chantix) is a new medication that recently received FDA approval for smoking cessation. Scientists are also investigating the potential of a vaccine that targets nicotine for use in relapse prevention. The nicotine vaccine is designed to stimulate the production of antibodies that would block access of nicotine to the brain and prevent nicotine's reinforcing

effects.[1]

Behavioral interventions play an integral role in smoking cessation treatment, either in conjunction with medication or alone.[1] They employ a variety of 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 alternative coping strategies, manage stress, improve problem solving skills, as well as increase social support. Research has also shown that the more therapy is tailored to a person's situation, the greater the chances are for success.[1]

Quitting smoking can be difficult. While people can be helped during the time an intervention is delivered, most intervention programs are short-term (one to three months). Within six months, 75–80 percent of people who try to quit smoking relapse.[1].Research has now shown that extending treatment beyond the typical duration of a smoking cessation program can produce quit rates as high as 50 percent at one year.[1]

Major SAMHSA Activities/Resources:

- The NSDUH Report. November 15, 2007: *Depression and the Initiation of Cigarette, Alcohol, and Other Drug Use among Young Adults*: http://download.ncadi.samhsa.gov/prevline/pdfs/NSDUHRPT07-1115.pdf

- NSDUH: *Cigarette Use among Blacks: 2005 and 2006:* http://download.ncadi.samhsa.gov/Prevline/pdfs/NSDUH07-0920.pdf

- Youth Tobacco Sales: State Synar Enforcement Efforts and SAMHSA's Synar Regulation Monitoring: http://download.ncadi.samhsa.gov/Prevline/pdfs/sma07-4300.pdf

- NSDUH: *Work Absences and Past Month Cigarette Use: 2004 and 2005*: http://download.ncadi.samhsa.gov/prevline/pdfs/NSDUH07-0517.pdf

- Nicotine Effects on the Body at Family Guide: http://www.family.samhsa.gov/be/smoking.aspx

- Clinical Preventive Services in Substance Abuse and Mental Health Update: From Science to Services: http://mentalhealth.samhsa.gov/publications/allpubs/SMA04-3906/ix.asp

- 2006 National Survey on Drug Use & Health: National Results: Chapter 4 Tobacco: http://www.oas.samhsa.gov/nsduh/2k6nsduh/2k6results.cfm#Ch4

- Cigarette Use Among Pregnant Women and Recent Mothers: http://www.oas.samhsa.gov/2k7/pregCigs/pregCigs.htm

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