10 - 20.10 Tobacco Related Disorders

20.10 Tobacco-Related Disorders

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substance use disorders, tobacco dependence differs from other substance dependencies in unique ways. Tobacco does not cause behavioral problems; therefore, few tobacco-dependent persons seek or are referred for psychiatric treatment. Tobacco is a legal drug and most persons who stop tobacco use have done so without treatment. Thus a common, but erroneous, view is that, unlike alcohol and other illicit drugs, most smokers do not need treatment. Several recent events may reverse the reluctance of psychiatrists to play a role in treating tobacco dependence: (1) the growing recognition that most psychiatric patients smoke and many die from tobacco dependence; (2) remaining smokers will be more and more likely to have psychiatric problems, which suggests that many need more intensive treatments; and (3) the development of multiple pharmacological agents to aid smokers

in quitting. EPIDEMIOLOGY The 2004 Monitoring the Future Survey concluded that, despite the demonstrated health risk associated with cigarette smoking, young Americans continue to smoke. However, 30-day smoking rates among high school students declined from peaks reached in 1996 for eighth-graders (21.0 percent) and tenth-graders (30.4 percent) and in 1997 for seniors (36.5 percent). In 2011, 30-day rates reached the lowest levels ever reported by Monitoring the Future surveys for eighth-graders (6.1 percent), tenth-graders (11.8 percent), and twelfth-graders (18.7 percent), with tenth-graders showing the most significant decline. Of high school seniors, 19 percent reported smoking during the month preceding their responses to the survey. The decrease in smoking rates among young Americans corresponds to several years in which increased proportions of teens said they believe a “great” health risk is associated with cigarette smoking and expressed disapproval of smoking one or more packs of cigarettes a day. Students’ personal disapproval of smoking had risen for some years. In 2011, 88 percent of eighth-graders, 85.8 percent of tenth-graders, and 83 percent of twelfth-graders stated that they “disapprove” or “strongly disapprove” of people smoking one or more packs of cigarettes per day. In addition, eighth-graders and tenth-graders reported significant increases in the perceived harmfulness of smoking one or more packs of cigarettes per day. The World Health Organization (WHO) estimates that there are 1 billion smokers worldwide, and they smoke 6 trillion cigarettes a year. The WHO also estimates that tobacco kills more than 3 million persons each year. Although the number of persons in the United States who smoke is decreasing, the number of persons smoking in developing countries is increasing. The rate of quitting smoking has been highest among well-educated white men and lowest among women, blacks, teenagers, and those with low levels of education. Tobacco is smoked most commonly in cigarettes, and then, in descending order, cigars, snuff, chewing tobacco, and in pipes. About 3 percent of all persons in the United States currently use snuff or chewing tobacco, and about 6 percent of young adults ages 18 to 25 use those forms of tobacco. Currently, about 19.3 percent of Americans smoke. The mean age of onset of smoking is 16 years, and few persons start smoking after 20. Dependence features appear to develop quickly. Classroom and other programs to prevent initiation are only mildly effective, but increased taxation does decrease initiation. More than 75 percent of smokers have tried to quit, and about 40 percent try to quit each year. On a given attempt, only 30 percent remain abstinent for even 2 days, and only 5 to 10 percent stop permanently. Most smokers make 5 to 10 attempts, however, so eventually 50 percent of “ever smokers” quit. In the past, 90 percent of successful attempts to quit involved no treatment. With the advent of over-the-counter (OTC) and non-nicotine medications in 1998, about one third of all attempts involved the use of

medication. In terms of the diagnosis of tobacco use disorder per se, about 20 percent of the population develops tobacco dependence at some point, making it one of the most prevalent psychiatric disorders. Approximately 85 percent of current daily smokers are tobacco dependent. Tobacco withdrawal occurs in about 50 percent of smokers who try to quit. According to the Centers of Disease Control and Prevention (CDC), regional differences exist in smoking throughout the United States. The 13 states with the highest prevalence of current smoking are Kentucky, West Virginia, Oklahoma, Mississippi, Indiana, Missouri, Alabama, Louisiana, Nevada, Tennessee, Alaska, North Carolina, and Ohio. Those states with lowest prevalence are Utah, California, Washington, Massachusetts, Rhode Island, District of Columbia, Hawaii, Maryland, Connecticut, New Hampshire, New Jersey, and Arizona. Utah had the lowest prevalence for men (10.6 percent) and for women (7.9 percent). Education Level of education attainment correlated with tobacco use. Of adults who had not completed high school, 37 percent smoked cigarettes, whereas only 17 percent of college graduates smoked. Psychiatric Patients Psychiatrists must be particularly concerned and knowledgeable about tobacco dependence because of the high proportion of psychiatric patients who smoke. Approximately 50 percent of all psychiatric outpatients, 70 percent of outpatients with bipolar I disorder, almost 90 percent of outpatients with schizophrenia, and 70 percent of patients with substance use disorder smoke. Moreover, data indicate that patients with depressive disorders or anxiety disorders are less successful in their attempts to quit smoking than other persons; thus, a holistic health approach for these patients probably includes helping them address their smoking habits in addition to the primary mental disorder. The high percentage of patients with schizophrenia who smoke has been attributed to tobacco’s ability to reduce their extraordinary sensitivity to outside sensory stimuli and to increase their concentration. In that sense, such patients are selfmonitoring to relieve distress. Death Death is the primary adverse effect of cigarette smoking. Tobacco use is associated with approximately 400,000 premature deaths each year in the United States—25 percent of all deaths. The causes of death include chronic bronchitis and emphysema (51,000 deaths), bronchogenic cancer (106,000 deaths), 35 percent of fatal myocardial infarctions (115,000 deaths), cerebrovascular disease, cardiovascular disease, and almost all cases of chronic obstructive pulmonary disease and lung cancer. The

increased use of chewing tobacco and snuff (smokeless tobacco) has been associated with the development of oropharyngeal cancer, and the resurgence of cigar smoking is likely to lead to an increase in the occurrence of this type of cancer. Researchers have found that 30 percent of cancer deaths in the United States are caused by tobacco smoke, the single most lethal carcinogen in the United States. Smoking (mainly cigarette smoking) causes cancer of the lung, upper respiratory tract, esophagus, bladder, and pancreas and probably of the stomach, liver, and kidney. Smokers are eight times more likely than nonsmokers to develop lung cancer, and lung cancer has surpassed breast cancer as the leading cause of cancer-related deaths in women. Even secondhand smoke (discussed below) causes a few thousand cancer deaths each year in the United States, about the same number as are caused by radon exposure. Despite these staggering statistics, smokers can dramatically lower their chances of developing smoke-related cancers simply by quitting. NEUROPHARMACOLOGY The psychoactive component of tobacco is nicotine, which affects the central nervous system (CNS) by acting as an agonist at the nicotinic subtype of acetylcholine receptors. About 25 percent of the nicotine inhaled during smoking reaches the bloodstream, through which nicotine reaches the brain within 15 seconds. The half-life of nicotine is about 2 hours. Nicotine is believed to produce its positive reinforcing and addictive properties by

activating the dopaminergic pathway projecting from the ventral tegmental area to the cerebral cortex and the limbic system. In addition to activating this dopamine reward system, nicotine causes an increase in the concentrations of circulating norepinephrine and epinephrine and an increase in the release of vasopressin, β-endorphin, adrenocorticotropic hormone (ACTH), and cortisol. These hormones are thought to contribute to the basic stimulatory effects of nicotine on the CNS. DIAGNOSIS Tobacco Use Disorder The fifth edition of the Diagnostic and Statistical Manual of Mental Disorder (DSM-5) includes a diagnosis for tobacco use disorder characterized by craving, persistent and recurrent use, tolerance, and withdrawal if tobacco is stopped. Dependence on tobacco develops quickly, probably because nicotine activates the ventral tegmental area dopaminergic system, the same system affected by cocaine and amphetamine. The development of dependence is enhanced by strong social factors that encourage smoking in some settings and by the powerful effects of tobacco company advertising. Persons are likely to smoke if their parents or siblings smoke and serve as role models. Several recent studies have also suggested a genetic diathesis toward tobacco dependence. Most persons who smoke want to quit and have tried many times to quit but have been unsuccessful.

Tobacco Withdrawal The DSM-5 does not have a diagnostic category for tobacco intoxication, but it does have a diagnostic category for nicotine withdrawal. Withdrawal symptoms can develop within 2 hours of smoking the last cigarette; they generally peak in the first 24 to 48 hours and can last for weeks or months. The common symptoms include an intense craving for tobacco, tension, irritability, difficulty concentrating, drowsiness and paradoxical trouble sleeping, decreased heart rate and blood pressure, increased appetite and weight gain, decreased motor performance, and increased muscle tension. A mild syndrome of tobacco withdrawal can appear when a smoker switches from regular to low-nicotine cigarettes. CLINICAL FEATURES Behaviorally, the stimulatory effects of nicotine produce improved attention, learning, reaction time, and problem-solving ability. Tobacco users also report that cigarette smoking lifts their mood, decreases tension, and lessens depressive feelings. Results of studies of the effects of nicotine on cerebral blood flow (CBF) suggest that short-term nicotine exposure increases CBF without changing cerebral oxygen metabolism, but long-term nicotine exposure decreases CBF. In contrast to its stimulatory CNS effects, nicotine acts as a skeletal muscle relaxant. Adverse Effects Nicotine is a highly toxic alkaloid. Doses of 60 mg in an adult are fatal secondary to respiratory paralysis; doses of 0.5 mg are delivered by smoking an average cigarette. In low doses the signs and symptoms of nicotine toxicity include nausea, vomiting, salivation, pallor (caused by peripheral vasoconstriction), weakness, abdominal pain (caused by increased peristalsis), diarrhea, dizziness, headache, increased blood pressure, tachycardia, tremor, and cold sweats. Toxicity is also associated with an inability to concentrate, confusion, and sensory disturbances. Nicotine is further associated with a decrease in the user’s amount of rapid eye movement (REM) sleep. Tobacco use during pregnancy has been associated with an increased incidence of low birth weight babies and an increased incidence of newborns with persistent pulmonary hypertension. Health Benefits of Smoking Cessation Smoking cessation has major and immediate health benefits for persons of all ages and provides benefits for persons with and without smoking-related diseases. Former smokers live longer than those who continue to smoke. Smoking cessation decreases the risk for lung cancer and other cancers, myocardial infarction, cerebrovascular diseases, and chronic lung diseases. Women who stop smoking before pregnancy or during the first 3 to 4 months of pregnancy reduce their risk for having low birth weight infants to

that of women who never smoked. The health benefits of smoking cessation substantially exceed any risks from the average 5-pound (2.3 kg) weight gain or any adverse psychological effects after quitting. TREATMENT Strategies to prevent tobacco use in children and adolescents are listed in Table 20.10-1. For those who already smoke, psychiatrists should advise them to quit smoking. For patients who are ready to stop smoking, it is best to set a “quit date.” Most clinicians and smokers prefer abrupt cessation, but because no good data indicate that abrupt cessation is better than gradual cessation, patient preference for gradual cessation should be respected. Brief advice should focus on the need for medication or group therapy, weight gain concerns, high-risk situations, making cigarettes unavailable, and so forth. Because relapse is often rapid, the first follow-up phone call or visit should be 2 to 3 days after the quit date. These strategies have been shown to double self-initiated quit rates (Table 20.10-2). Table 20.10-1 Primary Care Interventions to Prevent Tobacco Use in Children and Adolescents

Table 20.10-2 Typical Quit Rates of Common Therapies Ms. H was a 45-year-old patient with schizophrenia who smoked 35 cigarettes per day. She began her cigarette use at approximately 20 years of age during the prodromal stages of her first psychotic break. During the first 20 years of treatment, no psychiatrist or physician advised her to stop smoking. When the patient was 43 years of age, her primary physician recommended smoking cessation. Ms. H attempted to stop on her own but lasted only 48 hours, partly because her housemates and friends smoked. During a routine medication check, her psychiatrist recommended that she stop smoking, and Ms. H described her prior attempts. The psychiatrist and Ms. H discussed ways to avoid smokers and had the patient announce her intent to quit and request that her friends try not to smoke around her and to offer encouragement for her attempt to quit. The psychiatrist also noted that Ms. H became irritable, slightly depressed, and restless, and that she had insomnia during prior cessation attempts, and thus recommended medications. Ms. H chose to use a nicotine patch plus nicotine gum as needed. The psychiatrist had Ms. H call 2 days after her attempt to quit smoking. At this point, Ms. H stated that the patch and gum were helping. One week later, the patient returned after having relapsed back to smoking. The psychiatrist praised Ms. H for not smoking for 4 days. He suggested that Ms. H contact him again if she wished to try to stop again. Seven months later, during another medication check, the psychiatrist again asked Ms. H to consider cessation, but she was reluctant. Two months later, Ms. H called and said she wished to try again. This time, the psychiatrist and Ms. H listed several activities that she could do to avoid being around friends who smoked, phoned Ms. H’s boyfriend to ask him to assist her in stopping, asked the nurses on the inpatient ward to call Ms. H to encourage her, plus enrolled Ms. H in a support group for the next 4 weeks. This time the psychiatrist prescribed the non-nicotine medication varenicline (Chantix). Ms. H was followed with 15minute visits for each of the first 3 weeks. She had two “slips” but did not go back to smoking and remained an ex-smoker. (Adapted from John R. Hughes, M.D.) Psychosocial Therapies Behavior therapy is the most widely accepted and well-proved psychological therapy for

smoking. Skills training and relapse prevention identify high-risk situations and plan and practice behavioral or cognitive coping skills for those situations in which smoking occurs. Stimulus control involves eliminating cues for smoking in the environment. Aversive therapy has smokers smoke repeatedly and rapidly to the point of nausea, which associates smoking with unpleasant, rather than pleasant, sensations. Aversive therapy appears to be effective but requires a good therapeutic alliance and patient compliance. Hypnosis. Some patients benefit from a series of hypnotic sessions. Suggestions about the benefits of not smoking are offered and assimilated into the

patient’s cognitive framework as a result. Posthypnotic suggestions that cause cigarettes to taste bad or to produce nausea when smoked are also used. Psychopharmacological Therapies Nicotine Replacement Therapies. All nicotine replacement therapies double cessation rates, presumably because they reduce nicotine withdrawal. These therapies can also be used to reduce withdrawal in patients on smoke-free wards. Replacement therapies use a short period of maintenance of 6 to 12 weeks, often followed by a gradual reduction period of another 6 to 12 weeks. Nicotine polacrilex gum (Nicorette) is an OTC product that releases nicotine via chewing and buccal absorption. A 2 mg variety for those who smoke fewer than 25 cigarettes a day and a 4 mg variety for those who smoke more than 25 cigarettes a day are available. Smokers are to use one to two pieces of gum per hour up to a maximum of 24 pieces per day after abrupt cessation. Venous blood concentrations from the gum are one third to one half the between-cigarette levels. Acidic beverages (coffee, tea, soda, and juice) should not be used before, during, or after gum use because they decrease absorption. Compliance with the gum has often been a problem. Adverse effects are minor and include bad taste and sore jaws. About 20 percent of those who quit use the gum for long periods, but 2 percent use gum for longer than a year; longterm use does not appear to be harmful. The major advantage of nicotine gum is its ability to provide relief in high-risk situations. Nicotine lozenges (Commit) deliver nicotine and are also available in 2 mg and 4 mg forms; they are useful especially for patients who smoke a cigarette immediately on awakening. Generally, 9 to 20 lozenges a day are used during the first 6 weeks, with decrease in dosage thereafter. Lozenges offer the highest level of nicotine of all nicotine replacement products. Users must suck the lozenge until dissolved and not swallow it. Side effects include insomnia, nausea, heartburn, headache, and hiccups. Nicotine patches, also sold OTC, are available in a 16-hour, no-taper preparation (Nicotrol) and a 24- or 16-hour tapering preparation (Nicoderm CQ). Patches are administered each morning and produce blood concentrations about half those of smoking. Compliance is high, and the only major adverse effects are rashes and, with 24-hour wear, insomnia. Using gum and patches in high-risk situations increases quit

rates by another 5 to 10 percent. No studies have been done to determine the relative efficacies of 24- or 16-hour patches or of taper and no-taper patches. After 6 to 12 weeks, the patch is discontinued because it is not for long-term use. Nicotine nasal spray (Nicotrol), available only by prescription, produces nicotine concentrations in the blood that are more similar to those from smoking a cigarette, and it appears to be especially helpful for heavily dependent smokers. The spray, however, causes rhinitis, watering eyes, and coughing in more than 70 percent of patients. Although initial data suggested abuse liability, further trials have not found this. The nicotine inhaler, a prescription product, was designed to deliver nicotine to the lungs, but the nicotine is actually absorbed in the upper throat. It delivers 4 mg per cartridge and resultant nicotine levels are low. The major asset of the inhaler is that it provides a behavioral substitute for smoking. The inhaler doubles quit rates. These devices require frequent puffing—about 20 minutes to extract 4 mg of nicotine—and have minor adverse effects. Non-nicotine Medications. Non-nicotine therapy may help smokers who object philosophically to the notion of replacement therapy and smokers who fail replacement therapy. Bupropion (Zyban) (marketed as Wellbutrin for depression) is an antidepressant medication that has both dopaminergic and adrenergic actions. Bupropion is started at 150 mg per day for 3 days and increased to 150 mg twice a day for 6 to 12 weeks. Daily dosages of 300 mg double quit rates in smokers with and without a history of depression. In one study, combined bupropion and nicotine patch had higher quit rates than either alone. Adverse effects include insomnia and nausea, but these are rarely significant. Seizures have not occurred in

smoking trials. Of interest, nortriptyline (Pamelor) appears to be effective for smoking cessation and is recommended as a second-line drug. Clonidine (Catapres) decreases sympathetic activity from the locus ceruleus and, thus, is thought to abate withdrawal symptoms. Whether given as a patch or orally, 0.2 to 0.4 mg a day of clonidine appears to double quit rates; however, the scientific database for the efficacy of clonidine is neither as extensive nor as reliable as that for nicotine replacement; also, clonidine can cause drowsiness and hypotension. Some patients benefit from benzodiazepine therapy (10 to 30 mg per day) for the first 2 to 3 weeks of abstinence. A nicotine vaccine that produces nicotine-specific antibodies in the brain is under investigation at the National Institute on Drug Abuse (NIDA). Combined Psychosocial and Pharmacological Therapy Several studies have shown that combining nicotine replacement and behavior therapy increases quit rates over either therapy alone. Smoke-Free Environment Secondhand smoke can contribute to lung cancer death and coronary heart disease in

adult nonsmokers. Each year, an estimated 3,000 lung cancer deaths and 62,000 deaths from coronary artery disease in adult nonsmokers are attributed to secondhand smoke. Among children, secondhand smoke is implicated in sudden infant death syndrome, low birth weight, chronic middle ear infections, and respiratory illnesses (e.g., asthma, bronchitis, and pneumonia). Two national health objectives for 2010 are to reduce cigarette smoking among adults to 12 percent and the proportion of nonsmokers exposed to environment tobacco smoke to 45 percent. Involuntary exposure to secondhand smoke remains a common public health hazard that is preventable by appropriate regulatory policies. Bans on smoking in public places reduce exposure to secondhand smoke and the number of cigarettes smoked by smokers. Support is nearly universal for bans in schools and day-care centers and strong support for bans in indoor work areas and restaurants. Clean indoor air policies are one way to change social norms about smoking and reduce tobacco consumption. Bans on outdoor smoking in areas, such as public parks, are increasing and in 2006 one municipality in California banned smoking entirely within city limits except in one’s own home or car and windows had to remain closed. Currently over 600 municipalities have smoke-free park laws, including New York City, which banned smoking in all its public parks, including famed Central Park, in 2011. REFERENCES Arehart-Treichel J. Smoking high on list of suicide-risk factors. Psychiatr News. 2011;46:16. Benowitz NL. Neurobiology of nicotine addiction: Implications for smoking cessation treatment. Am J Med. 2008;121:S3. Blazer DG, Wu LT. Patterns of tobacco use and tobacco-related psychiatric morbidity and substance use among middle-aged and older adults in the United States. Aging Men Health. 2012;16:296. Dome P, Lazary J, Kalapos MP, Rihmer Z. Smoking, nicotine and neuropsychiatric disorders. Neurosci Biobehav Rev. 2010;34:295. Fiore M, Jean C, Baker T, Bailey W, Benowitz N: Treating Tobacco Use and Dependence: Clinical Practice Guideline. Washington, DC: US Public Health Service; 2008. Hatsukami DK, Benowitz NL, Donny E, Henningfield J, Zeller M. Nicotine reduction: Strategic research plan. Nicotine Tob Res. 2013;15(6):1003–1013. Hughes J. Nicotine-related disorders. In: Sadock BJ, Sadock VA, Ruiz P, eds. Kaplan & Sadock’s Comprehensive Textbook of Psychiatry. 9th ed. Philadelphia: Lippincott Williams & Wilkins; 2009:1353. Husten CG, Deyton LR. Understanding the Tobacco Control Act: Efforts by the US Food and Drug Administration to make tobacco-related morbidity and mortality part of the USA’s past, not its future. Lancet. 2013;381(9877):1570–1580. Lakhan SE, Kirchgessner A. Anti-inflammatory effects of nicotine in obesity and ulcerative colitis. J Translation Med. 2011;9:129. Margerison-Zilko C, Cubbin C. Socioeconomic disparities in tobacco-related health outcomes across racial/ethnic groups in the United States: National Health Interview Survey 2010. Nicotine Tob Res. 2013;15(6):1161–1165. Mushtaq N, Beebe LA, Vesely SK, Neas BR. A multiple motive/multi-dimensional approach to measure smokeless tobacco dependence. Addictive Behaviors, 2014;

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