Smoking Cessation
Medplex Clinic
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Approximately 25% of adults in the U.S. are current smokers. Smoking cessation is associated with health benefits for both male and female smokers of all ages. Participation in a smoking cessation program is associated with decreased all-cause mortality, particularly for smokers with airway obstruction.

Cardiovascular--Smoking cessation is associated with a rapid decrease in the risk of new myocardial events (including sudden cardiac death) for both individuals with and without a prior history of cardiac disease. There also appears to be a more gradual reduction in the risk of developing complications of atherosclerotic vascular disease. These benefits are established for all ages.

Pulmonary disease/COPD - Smoking cessation reduces the accelerated rate of decline of FEV1 found in smokers compared to non-smokers. An improvement in FEV1 can also be observed in the first year after quitting in patients with mild disease. In addition, a large number of smokers with cough and sputum production have an improvement in symptoms in the first 12 months after cessation.

Malignancy - Smoking is a major risk factor for many types of cancer and cessation is associated with reduced risk. In individuals with one smoking-related cancer, cessation can decrease the risk of developing a second smoking-related malignancy.

Peptic ulcer disease - Smoking cessation decreases the risk of developing peptic ulcer disease and accelerates the rate of healing in established disease.

Reproductive disorders - Smoking is associated with infertility, spontaneous abortion, ectopic pregnancy and premature menopause. Smoking cessation can reduce the increased risk of developing premature menopause associated with smoking.

Osteoporosis - Smoking accelerates bone loss and is a risk factor for hip fracture in women. Smoking cessation begins to reverse this excess risk after approximately 10 years.

Symptoms of withdrawal are common among patients attempting to stop smoking. These generally peak in the first three days and subside over the next three-to-four weeks. However, episodic craving for cigarettes may persist for many months. Other symptoms and signs associated with smoking cessation are depression, weight gain, and exacerbations of ulcerative colitis. While the depression associated with cessation is usually mild, it may be sufficiently severe to require counseling or anti-depressant therapy. Weight gain is very commonly associated with cessation. Weight gain of 1 to 2 kg in the first two weeks is often followed by an additional 2 to 3 kg weight gain over the next four to five months. The average weight gain is 4 to 5 kg, but may be much greater. Programs that integrate dietary interventions within smoking cessation programs have reported success in limiting weight gain. In any event, the benefits of quitting smoking clearly exceed the negative aspects of weight gain in the range that generally occurs.

Approaches to quitting:

90% of former smokers quit on their own without assistance from physicians, groups, patches, gum, hypnosis, acupuncture, or psychological counseling. Those who benefit most from an assisted method are heavy, more addicted smokers

Behavioral approaches - Most clinical trials for smoking cessation have used "intensive" counseling strategies. While there is some evidence that more intense behavioral interventions are associated with increasing rates of quitting, even minimal interventions are of benefit.

Physician counseling - Simple physician advice to quit can increase rates of smoking cessation in a general population. Advice combined with a personalized health message further improves rates of quitting. In addition, patients informed of an abnormal pulmonary function test have increased likelihood of quitting. A simple behavioral approach (often called the 5 A's) designed for physician offices has been developed by the National Cancer Institute and is also endorsed by the British Thoracic Society.

Smoking Cessation for the Primary Care Clinician†

Strategy 1
Ask: systematically identify all tobacco users at every visit.
- Implement an office-wide system that ensures that, for EVERY patient at EVERY clinic visit, tobacco-use status is queried and documented.

Strategy 2
Advise: strongly urge all smokers to quit
- In a clear, strong, and personalized manner, urge every smoker to quit.

Strategy 3
Identify smokers willing to make a quit attempt
- Ask every smoker if he or she is willing to make a quit attempt at this time.

Strategy 4
Assist: aid the patient in quitting
- Help the patient with a quit plan.
- Encourage nicotine replacement therapy or bupropion except in special circumstances.
- Give key advice on successful quitting.
- Provide supplementary materials.

Strategy 5
Arrange: schedule follow-up contact
- Schedule follow-up contact, either in person or via telephone.

† Modified from Fiore, MC, Bailey WC, Cohen, JJ, et al. Smoking Cessation. Clinical Practice Guideline Number 18. AHCPR Publication No. 96-0692. Rockville, MD: Agency for Health Care Policy and Research, Public Health Service, U.S. Department of Health and Human Services, 1996.

Physician counseling has traditionally occurred in the setting of an outpatient office visit, but also may be effective when given via a letter or via telephone. Physician counseling is also of benefit to hospitalized patients who smoke, particularly those admitted with acute myocardial infarction.

Group counseling - Group programs are offered by a number of commercial and voluntary health programs. These typically include lectures, group interactions, exercises on self-recognition of one's habit, some form of tapering method leading to a "quit day," development of coping skills, and suggestions for relapse prevention. The cost to smokers can vary from nothing to several hundred dollars. One year quit rates for persons who

complete such programs are approximately 20 percent. These programs appear to be more effective than self-help programs, which provide supplemental materials to smokers considering cessation.

Tapering versus quitting "cold turkey" - While gradual reduction may be used successfully in some group programs as a prelude to cessation, it is often associated with symptoms of nicotine withdrawal. Abrupt cessation, particularly on a defined "quit day," is the currently preferred strategy.

Hypnosis and acupuncture - Hypnosis and acupuncture are the basis of many commercially available stop-smoking programs. Scientific support for these two methods is weak, however, the availability of hypnosis and acupuncture programs may encourage renewed attempts to stop smoking by people who have failed with other techniques.

Nicotine replacement therapy - Nicotine is a potent psychoactive drug comparable to amphetamines, cocaine, or opiates in terms of inducing euphoria. The central nervous system effects of nicotine are related both to absolute blood nicotine levels and to the rate of increase in drug concentration present at receptors in the brain. In the absence of nicotine, a smoker not only experiences the loss of the euphoric effects of nicotine, but also may develop symptoms related to nicotine withdrawal. These include:

- Dysphoric or depressed mood
- Insomnia
- Irritability, frustration, or anger
- Increased appetite or weight gain
- Difficulty concentrating
- Anxiety
- Restlessness
- Decreased heart rate

Nicotine replacement therapy is designed to ameliorate these symptoms while a smoker deals with the behavioral aspects of smoking cessation. Nicotine replacement appears to be a safe therapeutic intervention, even in outpatients with known cardiovascular disease. Concurrent use of nicotine replacement with smoking is generally not recommended. However, concerns about excess cardiac toxicity associated with nicotine therapy and concurrent smoking appear to be unfounded.

Transdermal nicotine systems - A number of preparations of transdermal nicotine systems are available that deliver nicotine to the venous blood through a transdermal patch. There are several dosage formulations, and the highest (21 to 22 mg/patch) delivers nicotine at a rate which sustains a blood level approximately 40 to 50 percent of that with customary smoking of one and a half packs per day. Withdrawal symptoms are reduced in intensity, but not eliminated, with the nicotine patches.

The combination of intensive behavioral programs and nicotine patches has produced very favorable results. Transdermal nicotine therapy tends to double the quitting rates associated with whatever behavioral intervention is used. Intensive smoking cessation counseling in combination with transdermal nicotine replacement is safe and may be effective in hospitalized patients.

Treatment with nicotine patches is generally recommended at "full dose" for four to six weeks. Some brands of patches also include a tapering period for several additional weeks. Transdermal systems may be more effective in a primary practice setting than nicotine polacrilex. Unfortunately, long-term abstinence remains difficult; eight years after taking part in a randomized controlled trial, fewer than half of subjects abstinent at one year remained cigarette-free.

Nicotine nasal spray - The nicotine nasal spray delivers an aqueous solution of nicotine to the nasal mucosa.. While clinical trials have clearly documented the safety and efficacy of this nicotine delivery system, the nicotine nasal spray has an increased potential for prolonging nicotine dependence compared to the other nicotine replacement therapies.

Nicotine inhaler - The nicotine inhaler is comprised of a mouthpiece and a plastic, nicotine-containing cartridge; nicotine is released when air is inhaled through the device Localized irritation of the mouth or throat is common, particularly during the early stages of use. Because inhaled nicotine may cause bronchospasm, nicotine patches may be preferable for smokers with a history of severe airways reactivity.

Nicotine polacrilex - Nicotine gum contains nicotine bound to a polacrilex resin together with a buffering agent. Chewing releases nicotine, and different chewing techniques can affect the rate of release and absorption through the buccal mucosa. Two and four milligram formulations are available. Used together with an intensive behavioral program, nicotine gum may increase rates of quitting by up to two-fold. Therapy is generally recommended for three to six months. A nicotine polacrilex lozenge demonstrated efficacy similar to that of nicotine gum in one large trial. Nicotine polacrilex lozenges received FDA approval for over the counter marketing in late 2002.

Bupropion - Bupropion has been available for use as an antidepressant in the United States since 1989, and is believed to act by enhancing central nervous system noradrenergic and dopaminergic function. A sustained-release formulation of the drug (Zyban) is licensed as an aid to smoking cessation

Varenicline (Chantix) - Varenicline is a partial agonist of nicotinic acetylcholine receptors [126]. In randomized, controlled trials it appears to be 30 to 50 % more effective than buproprion, both in term of short term abstinence (9-12 weeks) and longer-term abstinence (up to 52 weeks).

Varenicline was approved by the US FDA in May 2006. The recommended dosing is to take varenicline after eating with a full glass of water as follows [133]: One 0.5 mg tablet daily for three days One 0.5 mg tablet twice daily for the next four days One 1 mg tablet twice daily starting at day seven.

Patients should try to quit smoking one week after starting varenicline. Treatment should be continued for 12 weeks before determining efficacy; patients who have successfully quit at 12 weeks can be continued on varenicline for an additional 12 weeks.

Common side effects include nausea and abnormal dreams. Given the high rates of nausea seen in the randomized trials, where side effects are often less common than in clinical practice, this may prove to be a limiting side effect in many patients.

RECOMMENDATIONS - There are two critical components of the quitting process. Smokers must have a reason for quitting, and must have the ability to quit. Most smokers have a desire to stop smoking, but are unable or insufficiently motivated to do so.

Evaluation process - In the evaluation process, the physician should assess the patient's cigarette use, the desire to stop smoking, and the nature of previous attempts to quit. For smokers who indicate they are not currently interested in quitting, the physician's role is to provide a reason for quitting. A personalized message concerning a smoking-related health problem may motivate some patients into action. For those who are currently interested in quitting, the physician should assess the current smoking history and previous experiences with attempts to quit. Some smokers (approximately 25 percent) are able to quit without developing tobacco withdrawal symptoms.

Therapeutic plan - Current recommendations are to offer each smoker willing to make a serious quit-attempt with the best intervention to help achieve success. Since data demonstrates increasing quit rates with increasing behavioral support, the most aggressive intervention possible should be offered. As the majority of smokers will decline referral to specialty centers, the "maximum acceptable" will often be brief, office-based intervention. Pharmacologic support should also be routinely offered. As approved medication can increase quit rates, current guidelines recommend maximizing the likelihood that each quit attempt will be successful.

Treatment and follow-up - The process of smoking cessation begins by setting a "quit day" within a two to three week period. Patients should be directed to stop smoking completely on their quit day and should be prepared for the tobacco withdrawal period. Patients should be informed that, even with nicotine replacement or bupropion, they may experience withdrawal symptoms, including anxiety, frustration, depression, and an often intense craving for cigarettes. It should be emphasized, however, that if patients do not smoke at all, tobacco withdrawal symptoms often become very manageable within a few weeks. Common suggestions to help smokers cope with the early days of quitting include use of chewing gum, increased activity, and avoidance of high-risk situations for smoking. A follow-up visit should be scheduled within three to seven days of the patient's quit day to provide reinforcement. No clear interventions have been identified that reliably reduce the rates of relapse following a period of successful cessation.

Long-term follow-up is also recommended because successful quitters remain at high risk of relapse for at least several years after smoking cessation. While most studies have focused upon the endpoint of abstinence at one year, long-term tracking of study participants reveals that 35 to 40 percent of patients may relapse between years one and five after quitting.