

The following abstracts, from medical journals containing the most recent literature on tobacco addiction and smoking cessation, were selected for their relevance to a managed care perspective.

A Smoking Cessation Algorithm

An algorithm for smoking cessation based on the principles of matching patients to treatments and exhausting less intensive therapies before using more intensive therapies has been developed. The algorithm integrates several treatments into a simple protocol that can be easily used by primary care physicians and HMOs. Algorithm recommendations include: (1) Smokers not contemplating cessation need motivational intervention. (2) Smokers contemplating cessation need information about treatments. (3) Smokers ready to quit need to set a quit date. (4) Formal therapy for cessation is needed only after a failed attempt. (5) Nicotine withdrawal symptoms or high scores on the Fagerstrom Tolerance Scale indicate the need for pharmacotherapy. (6) Transdermal nicotine is the preferred first-step pharmacotherapy. (7) Group therapy should be encouraged but not required. (8) Smokers not depending on pharmacotherapy should participate in group therapy. (9) Those who fail with nicotine replacement therapy and/or group behavioral therapy should be screened for psychiatric, alcohol, drug or other problems and referred for individual therapy.

Hughes JR. An algorithm for smoking cessation. *Arch Fam Med* 1994;3:280-285

The Most Effective Smoking Cessation Intervention

In a systematic review, data were analyzed from 188 randomized, controlled trials to review the efficacy of interventions to help people stop smoking. It was found that an estimated 2% of consecutive smokers stopped smoking as a result of unsolicited advice from their family practitioner; these did not relapse up to 1 year. Since one third of smokers die of a disease caused by smoking, the financial cost of saving a life following 5 minutes of advice is about \$1,500. This is based on an assumption that 5 minutes of a family practitioner's time costs about \$10 ($[\$10/2\%] \times 3$). The study also suggests that advice to quit may eventually benefit even those smokers who appear to turn a deaf ear. In smokers who do not quit immediately, the advice may contribute to future cessation of smoking by reinforcing messages received from other sources. Findings from randomized trials do not support behavior modification therapy, the average effect (2%) being no greater than unsolicited advice from a physician. Nicotine replacement therapy is effective in an estimated 13% of smokers, with the rate of effectiveness rising accordingly in smokers who are more nicotine dependent. Authors recommend nicotine replacement be made available to all but the least nicotine dependent smokers who seek to quit. Other interventions such as hypnosis, acupuncture, aversion therapy, and other pharmacological approaches (such as anxiolytics or antihypertensives) were found to be relatively ineffective. Physicians should take time to advise their patients who smoke to quit and encourage them to use nicotine replacement therapy.

Law M, Tang JL. An analysis of the effectiveness of interventions intended to help people stop smoking. *Arch Intern Med* 1995;155:1933-1941.

The Nicotine Patch Is a Cost-Effective Addition to Smoking Cessation Counseling

A decision-analysis model investigated the incremental cost-effectiveness of a nicotine patch prescribed as an adjunct to smoking cessation counseling. The study population comprised male and female smokers, ages 25 to 69 years, who were receiving primary care. Effectiveness was measured by comparing estimates of the number of smokers quitting after counseling with the number quitting after counseling plus a patch. Benefits were measured as additional quality-adjusted life-years (QALYs) saved; the intervention cost was the cost of the physician's additional time plus the retail price of the patch. The two methods combined yielded one additional lifetime quitter, at a cost of \$7,332. Incremental cost-effectiveness ratios ranged, by age group, from \$4,390 to \$10,943 per QALY in men and from \$4,955 to \$6,983 in women. At younger ages, improvements in quality-adjusted survival was greater in men than in women; this pattern was reversed in older groups. The findings support both the relative cost effectiveness of a nicotine patch as an adjunct to counseling and the desirability of third-party insurance coverage of patch therapy. The study also highlights the importance of adjusting for quality of life (QOL), because failing to take into account the difference in QOL between former and current smokers results in underestimates of the cost effectiveness of smoking cessation interventions.

Fiscella K, Franks P. Cost-effectiveness of the transdermal nicotine patch as an adjunct to physicians' smoking cessation counseling. *JAMA* 1996;275:1247-1251

Smoking Cessation and Healthcare Use

To determine the impact of smoking cessation on inpatient and outpatient healthcare use, a comparison was made of 2,440 persistent smokers and 244 biochemically verified quitters, all participants in two randomized trials of smoking cessation interventions. Smokers in both trials experienced increases in: the number of outpatient visits, from 7% to 15%; hospital admissions, from 30% to 45%; and hospital days, from 75% to 100%, over a 5- to 6-year follow up period. A specific pattern of healthcare service use was found to accompany smoking cessation, including a reduction in hospital use prior to quitting, an increase in outpatient and inpatient service use in the year of cessation, followed by a decline to levels lower than those for smokers. Those who successfully quit smoking had lower rates of service use 2 to 4 years after cessation for all service use variables studied. Successful smoking cessation appears to stop the progressive increase and may be associated with a decline in admissions compared with baseline levels of healthcare use.

Wagner EH, Curry SJ, Grothaus L, et al. The impact of smoking and quitting on healthcare use. *Arch Intern Med* 1995;155:1789-1795

Impact of Adult Smoking on Children's Health

This study focused on the association between smoking and otitis media, tympanostomy, tonsillectomy, adenoidectomy, asthma, coughs, lower respiratory tract illness, and fires caused by smoking materials to estimate the number of children adversely affected by adult smoking. A literature review identified relevant English-language reports of cohort and case-control studies, and a measure of pooled relative risk for each condition was developed through meta-analysis. Risk ratios and data on exposure rates were combined to develop estimates of population-attributable risk. According to best- and worst-cases calculations, tobacco is associated with 354,000 to 2.2 million cases of otitis media annually (2% to 13% of all cases); roughly 5,200 to 165,000 tympanostomies (0.84% to 26%); 14,000 to 21,000 tonsillectomies and adenoidectomies (16% to 24%); 307,000 to 522,000 cases of asthma (8% to 13%); 529,000 office visits for asthma exacerbations; and 1.3 million to 2 million visits for coughs (10% to 16%). In addition, in children younger than age 5, 12% to 20% of lower respiratory tract infections (bronchitis and pneumonia), 136 to 212 deaths from lower respiratory tract illness, and 148 deaths from fires could be attributed to smoking. In light of these impacts of adult smoking, actions to safeguard children's health from the effects of smoking should be initiated, including legislative efforts; consideration of smoking behavior in custody cases; and manufacturers' or government action to produce fire-safe cigarettes.

DiFranza JR, Lew RA. Morbidity and mortality in children associated with the use of tobacco products by other people. *Pediatrics* 1996;97:560-568

Relationship Between Smoking and Pulmonary Function in the Elderly

Few population-based studies of pulmonary function in the elderly have included many subjects aged 75 years or older. Moreover, whether smoking accelerates ventilatory function loss similarly in the elderly as in middle-aged and younger adults has not been established. This study in a population-based sample of 1,397 men and women, aged 51 to 95 years (model age, 73) was conducted to examine the effects of age and smoking behavior (active, passive, and quitting) on ventilatory function. Standardized interviews collected data on smoking history; pulmonary function was assessed by spirometry. Pulmonary function decreased with age; forced expiratory volume in 1 second (FEV1; in liters) fell by 41 ± 2 and 27 ± 2 mL per year in men and women, respectively. This effect was accelerated by active, but not passive, smoking. The age- and height-adjusted FEV1 of smokers who had quit before age 40 was similar to that of nonsmokers; the FEV1 of those who quit between age 40 and 60 was lower than that of nonsmokers and higher than that of current smokers; and those who quit after age 60 and current smokers had similar FEV1s. The findings that an age-related decrease in pulmonary function is accentuated by smoking and reduced by quitting is additional evidence that smoking cessation has a beneficial impact on preventing the progression of functional respiratory impairment.

Frette C, Barrett-Connor E, Clausen JL. Effect of active and passive smoking on ventilatory function in elderly men and women. *Am J Epidemiol* 1996;143:757-765

A Model of Smoking and Lung Cancer Incidence

It is now generally accepted that a strong causal association exists between cigarette smoking and the risk of lung cancer. This study presents an approach to developing a model that quantifies the impact of population changes on exposure. Population-based data on smoking history from the National Center for Health Statistics' (NCHS) Health Interview Survey Smoking supplements for 1978, 1979, and 1980 and data from the Connecticut Tumor Registry were used to develop a model of the incidence of lung cancer in Connecticut. Subgroups, developed by estimating the proportions of smokers and ex-smokers and the mean duration of smoking, were used in the model. The models represented a combination of the smoking subgroups, with the effect of smoking considered to be either a multiplicative effect on the underlying age distribution, or a separate effect in which exposure level was the sole contributor to lung cancer risk in smokers. The multiplicative model explained the greatest proportion of the variation in lung cancer incidence in Connecticut; the nonmultiplicative model accounted for period and cohort effects only in women. The authors caution that this type of population-based analysis should not be considered a substitute for carefully controlled epidemiologic studies, but that it can provide an important step in applying the results of etiologic research to a population in order to better understand the public health implications of disease control programs.

Holford TR, Zhang Z, Zheng T, McKay L. A model for the effect of cigarette smoking on lung cancer incidence in Connecticut. *Stat Med* 1996;15:565-580

Stage of Smoking Cessation Behavior and Other Health Behaviors

Interrelationships among health behaviors may reflect a motivation to lead a healthy life. People who hold positive attitudes about one health behavior are likely to have positive attitudes toward others. This study investigated the hypothesis that individuals in the later stages of smoking cessation would have more healthful behaviors than would quitters in the early-stage. Subjects were 929 adults who had participated in the 1993 California Behavioral Risk Factor Surveillance System and who were current smokers or trying to quit at the time of the survey. They were divided into five groups, ranging from precontemplation (current smoker; not considering quitting within next 6 months) to maintenance (not a current smoker; has not smoked within previous 6 months). Health behaviors used as dependent variables included alcohol and seat belt use, physical activity, and having a fire escape plan. The stage of change in smoking behavior was regressed on demographic variables, using univariate and multivariate models, and each health behavior was regressed on stage of change, controlling for demographic covariates. Stage was associated with alcohol use and physical activity, with subjects in the later stages of quitting having more healthful behaviors. These results have implications for the design of smoking cessation programs and other health promotion interventions. They also suggest that interventions targeted to one health behavior may be especially effective in those who are changing other behaviors.

Unger JB. Stages of change of smoking cessation: Relationships with other health behaviors. *Am J Prev Med* 1996;12:134-138.

Business Compliance with Self-Enforced Antismoking Laws

States and communities have enacted legislation to restrict smoking as a means of protecting individuals from exposure to tobacco smoke and, possibly, to discourage smoking. The laws generally are self-enforcing, with little government enforcement or monitoring. In this study, a telephone survey of two random samples of businesses was conducted in Cambridge, Massachusetts, 3 and 24 months after enactment of a no-smoking law, to assess whether businesses comply with such legislation. Response rates at 3 and 24 months were 76% and 79% respectively. Awareness and approval of the law initially was high, but awareness decreased over time (from 92% to 73% at 24 months; $P < 0.0001$). In addition, businesses had only incomplete knowledge of the law's requirements, and the level of awareness was lower in small businesses than in larger ones. Although roughly 80% restricted smoking at 3 and 24 months, only 50% completely complied at either point. The proportion of businesses reporting having a smoking policy decreased over time. Multivariate analysis showed that compliance was significantly higher in companies aware of and in favor of the law, and in those with nonsmoking owners. This type of low-cost, self-enforcement approach yielded a high level of support, and an intermediate level of compliance. The authors suggest that programs should target small companies, periodic reminders would help to maintain business awareness, and providing sample smoking policies might help to improve compliance.

Rigotti NA, Stoto MA, Schelling TC. Do businesses comply with a no-smoking law? Assessing the self-enforcement approach. *Prev Med* 1994;23:223-229

Decreasing Tobacco Use in an HMO

Group Health Cooperative (GHC) of Puget Sound, in Seattle, was one of the first businesses to ban smoking from all facilities. Since its founding, smoking prevention has been a core value. In 1991, a group sponsored by the Committee on Prevention, a standing GHC committee, produced a report titled, "Decreasing Tobacco Use at GHC During the 1990s." Using a population based, evidence driven perspective, the report made recommendations to support the implementation of interventions at different levels, depending on their potential for effectiveness to encourage adolescents never to smoke, to motivate smokers to quit and support their efforts, and to help quitters avoid relapse. The GHC worker population is similar to the Washington State population as a whole. The prevalence of tobacco use at GHC has dropped to 15.5% from 20% in 1990 and 25% in 1985, while in the state of Washington tobacco use declined from 23.7% in 1987 to 21.8% in 1993 and 1994. Broad organization commitment is required to develop and implement evidence based processes and structures directed at achieving targeted outcomes.

McAfee T, Wilson J, Dacey S, et al. Awakening the sleeping giant: Mainstreaming efforts to decrease tobacco use in an HMO. *HMO Practice* 1995;9:138-143.

Do HMOs Provide Quality of Care?

Until now, cost has been the deciding factor in choosing one healthcare plan over another. Now that premiums are leveling off, quality of service has become a major factor in the providers' arena. Business administrators realize that healthcare premiums must also figure in time lost at work and lower productivity, if quality healthcare is not provided. Some corporations are demanding audited data on the quality of healthcare from third parties such as the National Committee on Quality Assurance (NCQA), and other nonprofit organizations that accredit managed care plans. Employers have begun not only to weigh data on quality in making purchasing decisions, but also to publish the data, allowing employees to see for themselves. Few employers believe that NCQA accreditation guarantees a high standard of care, but failure is another issue. Since 1989, the New York State Health Department has gathered information on coronary bypass graft operations throughout the state. The physician-by-physician breakdown shows how one doctor's performance can affect the rate of an entire hospital. Over time, patterns on quality of care begin to emerge. Although it is not currently required, some HMO operators put a premium on member physicians' board certification. However, many healthcare purchasers are not satisfied with NCQA or board certification alone. They demand documented improvements in preventive care. As more information becomes public, investors will find that employees are likely to make their own demands about who will provide their healthcare.

Mahar M. Time for a checkup: HMOs must now prove they are providing quality care. *Barron's* March 4, 1996:29-35.

Relative Effects of Taxation and a Media Campaign on Smoking Cessation

The tax on a pack of cigarettes in California increased by \$0.25 in 1989, and some of the additional revenues were earmarked for programs, including a statewide antismoking multimedia campaign, to reduce tobacco use. This study examined the relative effectiveness of the two activities on cigarette consumption. California State Board of Equalization data on cigarette consumption, based on monthly sales of cigarette tax stamps for 1980 to 1992, were used to estimate a time-series model, adjusted for seasonal variations and time trends. The media campaign was measured in terms of media placement expenditures by the Department of Health Services' Tobacco Control Section. Both taxation and the media campaign had statistically significant effects on reductions in cigarette consumption ($P < 0.01$ and $P < 0.02$, respectively). As measured by both relative elasticities and absolute effects, the tax increase reduced consumption more than did the media campaign (by 819 and 232 packs, respectively). However, the authors point out that changing the size of each method (eg, increasing media expenditures and imposing a smaller tax) would affect these relative impacts. Moreover, because each method represents a different way to reduce consumption, using a portion of tax revenues to fund an antismoking campaign is an effective approach to achieving this goal.

Hu T-W, Sung H-Y, Keeler TE. Reducing cigarette consumption in California: Tobacco taxes vs an anti-smoking campaign. *Am J Public Health* 1995;85:1218-1222.

CME QUESTIONS: TEST #0296S6

Instructions

After reading this Special Report, select the best answer to each of the following questions. In order to receive 1 CME credit, at least 7 of the 10 answers must be correct. Estimated time for this activity is one hour. CME credits are distributed on a yearly basis.

1. Encouraging patients to quit smoking is important for which reason:

- a) more than 400,000 people in the US die each year from smoking-related causes
- b) smoking has detrimental effects on the heart, lungs, reproductive system, digestive tract, skin and other organs
- c) smoking cessation improves health status almost immediately
- d) smoking is harmful to the smoker's family members and coworkers
- e) all of the above

2. With regard to smoking cessation programs, most MCOs fall into three categories:

- a) those that cover them 100%; those that require patients to contribute part of the cost; those that will cover 50% of the cost
- b) those that offer smoking cessation programs; those that value smoking cessation programs yet don't include them as a covered service; those that don't recognize the value of smoking cessation programs.
- c) those that have established in-house smoking cessation programs; those that contract out smoking cessation services; those that provide educational materials for patient self-direction
- d) those that cover nicotine replacement therapy (NRT); those that restrict NRT; those that don't cover NRT.
- e) those that encourage physicians to ask about smoking status; those that don't provide smoking cessation direction to physicians; those that discourage physicians from asking about smoking status

3. Managed Care Organizations benefit from funding smoking cessation programs for all but one of these reasons (choose the "wrong" answer):

- a) patients who quit smoking are healthier, which is a long-term cost benefit
- b) accreditation from the National Committee for Quality Assurance is more likely to be granted to MCOs that offer smoking cessation programs
- c) such programs are inexpensive to set up and manage*
- d) smoking cessation programs are perceived as a "value-added" service by large employers
- e) by year 3, smokers who quit have lower healthcare utilization rates

4. In the work site smoking cessation is important for all but one of these reasons (choose the "wrong" answer):

- a) work site maintenance costs are higher when employees are allowed to smoke on-site
- b) employees who smoke are less productive during the work day
- c) smokers have more illnesses and days lost due to illness
- d) second-hand smoke endangers nonsmoking employees
- e) employees who smoke generally take longer lunch breaks and are frequently late for work

5. Ways to identify smokers include:

- a) asking about smoking habits while taking vital signs
- b) have patients fill out a questionnaire that asks about smoking habits
- c) enlist the help of nurses and office staff to ask patients about smoking habits
- d) code charts and forms to prompt questions about smoking
- e) all of the above

6. One of the most effective ways to encourage smokers to quit is:

- a) for the physician to tell the smoker he or she needs to quit and why
- b) to give the patient self-directed, educational literature
- c) to ask community smoking cessation groups to contact the smoker
- d) by raising taxes on cigarettes and adding surcharges to auto and life insurance
- e) having the patient watch specially developed smoking cessation videos

(CME QUESTIONS CONTINUED ON PAGE S44)

AMA/CME TEST FORM		Please circle your answers:		(PLEASE PRINT CLEARLY)	
AJMC Test #0296S6		1. a b c d e		Name _____	
Promoting Smoking Cessation in a Managed Care Environment		2. a b c d e		Address _____	
Application for 1 Credit Hour of AMA Category I		3. a b c d e		City _____	
(Test valid through June 30, 1997. No credit will be given after this date.)		4. a b c d e		State/Zip _____	
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CME QUESTIONS: TEST #0296S6

(continued from page S43)

7. A "proper" and effective smoking intervention requires:

- a) 20 to 30 minutes of counseling
- b) well organized and produced educational materials
- c) regular, weekly follow up from trained staff members
- d) as little as 2 or 3 minutes of personal communication from the physician
- e) all of the above

8. A smoking intervention can be called a "success":

- a) when the patient has not smoked for at least 1 year
- b) when the patient begins to think seriously about quitting
- c) after the patient has completed a smoking cessation program
- d) when the patient has set a "quit date"
- e) all of the above

9. The panel's consensus is that nicotine replacement therapy is effective for most quitters and should be made available to patients who:

- a) appear motivated and realize that quitting will not be easy in any case
- b) have tried many other types of programs and have relapsed several times
- c) believe the patch or gum will make quitting easy
- d) ask specifically for NRT
- e) are enrolled in some type of counseling or support program

10. Relapse among quitters should be viewed as a:

- a) failure
- b) sign that the patient is not truly willing to quit
- c) signal that the NRT dosage should be increased
- d) common occurrence that can be part of the disease recovery process
- e) infrequent event that should be analyzed

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PROGRAM EVALUATION

Albert Einstein College of Medicine & Montefiore Medical Center would like to have your opinion. Please fill out the questionnaire below, tear off along the dotted line, and mail along with your AMA/CME test form. We thank you for your evaluation, which is most helpful.

On the whole, how do you rate the information presented in the article?

excellent good fair poor

Is the information presented useful in your practice?

yes no

Comments:

Do you have recommendations to improve this program?

yes no

Comments:

Were any portions of this program unsatisfactory or inappropriate?

yes no

If so, which?

Do you find the information presented in these articles to be fair, objective, and balanced?

yes no

Is there subject matter you would like included in the future?

yes no

Comments:

In your opinion, were the authors biased in their discussion of any commercial product or service?

yes no

Comments:

Program Evaluation

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