

## **Healthy Aging**

### **Tobacco Use and Smoking Cessation Among Seniors**

*Our mission is to help the people of Canada  
maintain and improve their health.*

**Health Canada**

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## Foreword

This document on smoking cessation and seniors was developed as a background paper for the *Workshop on Healthy Aging: Aging and Health Practices*, organized by Health Canada's Division of Aging and Seniors in November 2001. Following a series of internal investigations, the Division identified four key determinants that play key roles in healthy aging: healthy eating, injury prevention, physical activity, and smoking cessation. The Division convened a workshop to solicit the advice of experts and stakeholders on the development of an action plan on healthy aging, with a specific focus on the four areas noted above. Prior to the workshop, participants were provided with a series of background papers viewing the four key determinants through a healthy aging lens. This document is a revised version of the paper on smoking cessation, incorporating comments from experts and stakeholders.

## **A. Overview of the Issue**

### **Significance of the Issue**

Smoking is the number one preventable cause of death and disease in Canada. It is estimated that smoking prematurely kills three times more Canadians than car crashes, suicides, drug abuse, murder and AIDS combined. Health Canada's Centre for Disease Control has estimated that a total of 45,064 deaths in Canada were attributable to smoking in 1991. By 2000, the number of such deaths was projected to reach 46,910. This growth was attributed to a 24% increase in smoking-related deaths among females, which offset a 4% decrease among males.

Cigarette smoking is implicated in eight of the top fourteen causes of death for adults 65 years of age or older. Smoking causes disabling and fatal disease, including lung and other cancers, heart and circulatory diseases, and respiratory diseases such as emphysema. It also accelerates the rate of decline of bone density during ageing. At age 70, smokers have less dense bones and a higher risk of fractures than non-smokers. Female smokers are at greater risk for post-menopausal osteoporosis. Non-smokers may also be placed at risk through exposure to environmental tobacco smoke (ETS). (Eliminating non-smokers' exposure to ETS is an important objective of comprehensive tobacco control programs.)

Evidence is also accumulating that smoking causes a heavy burden in terms of physical functioning. In the Alameda County study of older people, Guralnik and Kaplan found that smokers in 1965 who survived to 1984 were twice as likely to show reduced levels of physical functioning and ability than those who never smoked.

Half of long-term smokers die of tobacco-related illnesses. Of these, one-half die in middle age, the rest suffer a variety of chronic conditions related to smoking and die in older age. Despite their tendency to die earlier, smokers' lifetime health care costs have been shown to be higher than those of non-smokers.

The good news is that many of the negative health effects of smoking can be reversed with cessation.

### **Magnitude of the Problem**

In 2000, smoking rates in Canada reached the lowest overall level since regular monitoring of smoking began in 1965. Slightly more than six million people, or 24% of the population 15 years or older, were smokers in 2000.

Compared to younger people, smoking is less prevalent among seniors. In 1996-1997, 12% of seniors living in a private household were daily smokers, compared with 21% of those 55 to 64 years of age, and 28% of those 25 to 54. However, the proportion of daily smokers increases steadily with age. Among smokers 15 to 17 years of age, 66% smoke daily. This rises to 92% among people 65 years of age or over who smoke daily. Aboriginal people report the highest rates of smoking in Canada, about double the overall rate in

the Canadian population as a whole. Among 45- to 49-year-olds, 59% smoke. This drops to 35% among those 65 to 74 years of age and 23% among those 75 or over.

## **Trends**

The Canadian Tobacco Use Monitoring Survey concluded that smoking prevalence has declined since 1990 when 30% of Canadians smoked. In 1996-97, 36% of all seniors, including over half of senior men (52%) and almost one in four senior women (24%), were former smokers.

There are favourable trends in the prevalence of smoking among seniors. The smoking rate of adults 65 years of age or over in the United States declined from 18% to 12% from 1965 to 1994. Similar declines would be expected in Canada. The rate of decline in older smokers, however, is slower than in younger smokers.

Many seniors are former smokers. Quit rates are higher among older people than for younger people. However, Canadian smokers 45 years of age or over are more likely than younger smokers 15 to 44 years to say that nothing would get them to quit smoking. Few (3%) say that a program aid or cigarette alternative would motivate them to quit. These statistics suggest that older people with lengthy smoking histories are likely to need additional assistance with cessation. Those who still smoke may doubt that quitting later in life will reap any benefits and are likely to be highly dependent on nicotine.

Despite the general decline in smoking prevalence among women since the late 1970s, the number of smoking-related deaths for females is growing. This can be attributed to an increase in smoking prevalence among those 65 years of age or over, believed to be a cohort effect of the growth in the popularity of smoking among younger women in the late 1940s and 1950s.

Over the years, differences in smoking patterns between men and women, and subsequent differences in the prevalence of lung cancer and other fatal illnesses, have been an important factor in differing life expectancies. As more and more women smoke, these differences are likely to narrow. Indeed, lung cancer has already replaced breast cancer as the number one cause of cancer deaths among women in many resource-rich countries, where women have been smoking for 30 years or more.

## **Some Key Considerations**

Deaths from smoking result in, on average, 15 years' loss of expected life. Health Canada estimates that smoking will account for more than 50% of deaths before age 70 among today's 15-year-old smokers.

### ***Nicotine addiction***

Nicotine is the drug in tobacco that makes smoking a powerful addiction. Experts rank nicotine ahead of alcohol, cocaine and heroin with regard to the severity of dependence resulting from its use. Nicotine is one of thousands of chemicals in tobacco products, but it is considered the primary compound that affects brain function. Nicotine deprivation can impair attention and

cognition, and it can also reverse these withdrawal-induced deficits. Performance impairment has been observed within four hours of tobacco deprivation. Many studies describing nicotine's "enhancement" of attention and cognition only demonstrated that nicotine reversed withdrawal effects. Poor attention level and lowered cognition following a period of nicotine deprivation can be a strong motivating factor to smoke to reverse such deficits, thus maintaining nicotine addiction.

### ***Chemicals***

Scientists have found more than 4,000 different compounds in tobacco smoke. More than 40 of the chemicals in tobacco are known to cause cancer.

### ***Drug interference***

Smoking can affect mean levels for drugs and interfere with a range of drug therapies, including anti-depressants. As a result, drug dosages for the older smoker may be sub-therapeutic or ineffective. A majority of seniors take some form of prescription or over-the-counter medication. For example, in 1997, 84% of all seniors living at home took some form of medication in the two days prior to the National Population Health Survey, with 56% using two or more medications in this period.

### ***Psychiatric comorbidities***

Clinical depression among smokers may exceed that among non-smokers. Nicotine may have effects to alleviate certain psychiatric symptoms. Depressed persons are less likely to quit successfully and often suffer an increase in symptoms after quitting.

### ***Hard-core smokers***

There is some suggestion that older smokers are more likely to be "hard-core" smokers (heavy smokers with weak quitting histories who expect never to quit smoking). Current evidence suggests that hard-core smokers make up about 5% of all smokers and they will be largely unaffected by the messages of tobacco control. Still, it appears that current tobacco control initiatives have a long way to go before they hit a wall of recalcitrant smokers.

### ***Readiness to quit smoking***

Older smokers have attitudes less favourable to being ready to try to quit smoking. Less than one-quarter say they are planning to quit in the next three months. Older smokers are far less likely to accept the health risks associated with smoking and more likely to view smoking as a beneficial coping and weight control tactic. Among smokers 50 years of age or older, those with realistic health consequences of smoking and those who perceive smoking as addictive were more likely to be ready to quit. Older smokers are less likely than younger smokers to attempt quitting, but they are more likely to be successful in the attempts.

### ***Physical fitness***

Smoking may be a detriment to physical fitness for all age groups. One recent study suggests that smokers have lower physical endurance than non-smokers, when differences in average exercise levels are taken into account. Smoking reduces the ability of the blood to carry oxygen and increases the heart rate and basal metabolic rate, thus counteracting the benefits of physical

activity, including cardiovascular fitness.

### ***Economic costs***

In 1991, the economic cost to society from tobacco use in Canada was estimated to be between \$11 and \$15 billion. Direct costs to the Canadian health care system from tobacco use amount to between \$3 and \$3.5 billion annually. The largest amount of smoking-related health care costs in Canada is spent on hospital care, with higher costs attributable to older smokers.

According to the U.S. Centre for Disease Control and Prevention, in 1993 the smoking-attributable costs for medical care were US\$50 billion in the general population. For individuals 65 years of age or older, the estimated costs were US\$21 billion.

### ***Other health risks***

The risks of smoking and smokeless tobacco use (i.e. chewing tobacco, snuff) are well established and numerous. The hazards of smoking extend well into later life. Among men and women over the age of 65, the mortality rate among current smokers is twice that of people who have never smoked. Not only is smoking a major risk factor in eight of the top 16 causes of death for people 65 years of age or older, it also complicates illnesses and conditions that are prevalent in older people. These include:

- heart disease
- a variety of cancers
- diabetes
- respiratory diseases
- high blood pressure
- circulatory and vascular conditions
- duodenal ulcers
- reductions in smell and taste
- osteoporosis
- cataracts
- effects on teeth and gums
- sleep disturbances.

Several recent reports provide strong evidence of an association between smoking and osteoporosis (decreased bone density), which, in turn, predisposes a person to bone fractures. Significant bone loss has been found in post-menopausal women and older men with prolonged smoking exposure.

In a recent large epidemiological study, smoking was linked to sleep disturbances such as difficulty in falling asleep and symptoms suggestive of sleep fragmentation in both men and women.

Evidence of a link between cataracts and smoking continues to grow. Studies suggest that about 20% of cataracts in the United States are attributable to smoking. An association may also exist between smoking and a type of thyroid disease called Graves' disease.

Smoking decreases blood flow in the small vessels of the skin, perhaps damaging skin

components, and leading to skin wrinkling and an appearance of premature aging in both men and women.

### **Compelling Evidence Linked to Healthy Aging**

Research has shown that it is beneficial to quit smoking at any age. The MacArthur Foundation Study emphasizes the fact that smoking is age blind: while the risks of smoking persist into old age, so do the benefits of smoking cessation.

Cessation of smoking exerts a protective action that increases with the number of years since stopping. Among older smokers, the benefits of cessation for coronary heart disease and stroke are almost immediate, with a rapid decrease in mortality, while the benefits on respiratory function occur over a longer period of time.

Significant improvements in circulation and pulmonary perfusion occur rapidly when older people stop smoking, with most of the improvement occurring in the first year. Much of the abnormality in pulmonary epithelial permeability induced by smoking appears to be rapidly reversible.

According to research, smoking causes 80% to 90% of all emphysema and chronic bronchitis cases. The incidence and progression of chronic obstructive lung disease is substantially reduced upon quitting smoking. Cigarette smokers who quit prior to developing abnormal lung function are unlikely to develop ventilatory limitations.

Former smokers have lower overall mortality rates, a decreased risk of cardiovascular disease and recurrent myocardial infarctions, lung and other cancers, as well as better pulmonary and general physical functioning. There is potential for more rapid health-related and economic returns on investment from smoking cessation with older than younger adults.

The 1990 United States' Surgeon General's Report compiled data summarizing the dramatic and often immediate benefits of smoking cessation for older persons and declared, "it is never too late to quit smoking."

### **Effectiveness of Interventions**

Cessation remains the most effective way of altering smoking-induced disease at all ages, including those 65 years of age or over. Effective cessation interventions exist in both the clinical and public health contexts. There is no evidence to suggest that currently available interventions will be less effective in seniors.

Clinical guidelines for the treatment of tobacco dependence have been published. These guidelines provide an evidence base for the types of interventions that should be used by health care professionals to assist smokers to quit. Brief advice by medical providers to quit smoking is effective. More intensive interventions (i.e. individual, group or telephone counselling) that provide social support and training in problem solving are even more effective. Older patients are open to physician advice to quit and say that their quitting decisions and confidence in

quitting are influenced positively by this advice. Physicians are more likely to advise patients with commonly recognized smoking-related diseases, such as cardiovascular, cerebrovascular or respiratory diseases. Thirty-six percent of older smokers say that their physician never advised them to quit.

The evidence is strong and consistent that pharmacologic treatments for smoking cessation (specifically, nicotine replacement therapy and bupropion) can help people quit smoking. Pharmacotherapies are effective even when they are used without behavioural support programs. More and more people are using assistance when they quit. (Assistance is defined as self-help materials, counselling, and/or nicotine replacement therapy.) Those who use assistance have higher quit rates. One fifth to one third of quit attempts are made with assistance.

The impact of tobacco pricing appears to be less important at older ages for men; women of all ages appear to be more responsive to price. Response to health information messages declines with age, possibly because most anti-smoking campaigns have targeted younger people. Strategies to increase smoking cessation among seniors are called for and are particularly urgent in view of the increased prevalence of smoking in women now entering old age.

A handful of treatment outcome studies specifically examining predictors of quitting success among older smokers have confirmed the following factors as beneficial:

- lower nicotine dependence
- higher quitting self-efficacy
- level of educational attainment
- hospitalization for illness diagnosis of smoking-related disease (particularly CVD)
- prior quitting success
- stronger quitting motivation
- greater perceived health benefits
- lower perceived quitting barriers
- use of more quitting strategies
- having few or no acquaintances who smoke and/or a non-smoking spouse
- frequent contact with physicians and pharmacists for seniors using the nicotine patch.

These findings have been used, with promising results, to design individually tailored treatments for seniors, such as a current pilot study with older nicotine patch users.

Research published since 1990 has shown that older smokers are highly responsive to targeted smoking cessation programs, and that they are at least as likely as younger smokers, if not more, to succeed in quitting either on their own or with the aid of self-help and counselling with or without pharmacological aids. This includes brief interventions in primary care settings and combining quitting advice with nicotine replacement therapy. Unfortunately, despite the fact that older adults see their doctors more often than younger age groups, most of them fail to receive smoking cessation advice and assistance.

Research suggests that increased availability of nicotine replacement therapy (and other

cessation techniques) could help many older smokers quit, especially when combined with other interventions. These include:

- increased taxes on cigarettes
- bans on smoking in public places, particularly hospitals, clinics, workplaces and enclosed spaces where vulnerable non-smokers gather
- comprehensive bans on the promotion and marketing of tobacco and prominent health warnings on tobacco products
- comprehensive action against the smuggling of tobacco products.

There are sound, humane and economic arguments for implementing a comprehensive tobacco control policy that will benefit citizens of all ages, which includes the interventions described above. Seniors should not be left out of this strategy. Those with lengthy smoking histories are likely to need additional assistance with cessation.

## **B. Support for Action**

### **Current Health Canada Strategies**

Health Canada passed its *Tobacco Act* in 1997, which is designed to:

- protect the health of Canadians in light of conclusive evidence implicating tobacco use in the incidence of numerous debilitating and fatal diseases
- protect young persons and others from inducements to use tobacco products and the consequent dependence on them
- protect young persons by restricting access to tobacco products
- enhance public awareness of the health hazards of using tobacco products.

Since 1997, Health Canada has developed and delivered dozens of policies, interventions and programs. To date, none of these interventions and programs has been targeted to older adults. Many are targeted to the general population, adults in general, women, women with disabilities and Aboriginal peoples. The challenge will be to intensify opportunities to strengthen tobacco control and cessation initiatives aimed at older adults, rounding out an increasingly youth-focused prevention agenda.

### **Strategies Outside Health Canada**

Health Canada has a long history of working with outside agencies and non-governmental organizations on smoking cessation. To date, neither seniors organizations nor national voluntary health organizations are specifically targeting programs to older adults.

The Center for Disease Control in the United States has identified nine best practices for

comprehensive tobacco control programs, which include:

- community programs
- chronic disease programs to reduce the burden of tobacco-related diseases
- school programs
- enforcement
- state-wide programs
- counter-marketing
- cessation programs
- surveillance and evaluation
- administration and management.

Currently, no U.S. state is fully implementing all of these recommended program components. Approximate annual costs to implement all of the components have been estimated to range from US\$7 to US\$20 per capita in smaller states (populations of less than three million people), US\$6 to US\$17 per capita in medium-sized states (populations from three to seven million people), and US\$5 to US\$16 per capita in larger states (populations of more than seven million people).

Global action on tobacco is under way. On May 24, 1999, the World Health Assembly, the governing body of the World Health Organization, unanimously backed a resolution calling for a Framework Convention on Tobacco Control.

### **Priorities for Action and Additional Recommendations**

- There is no need to develop additional interventions at this time. We already know enough to get started. There is a need to understand best practices. Consideration should be given to conducting a systematic review of smoking cessation interventions for older adults. Methodologies exist to complete such a review in a scientific fashion. Physician-based interventions are ready to roll.
- Greater awareness could be developed in the seniors' population about the negative effects of second-hand smoke and the fact that quitting at any age leads to positive health benefits.
- Continuing efforts to legislate smoke-free spaces will continue to motivate more smokers to make attempts to quit.

## References

- American Academy of Dermatology. *Need another reason to quit? Smoking can ruin your skin, too* [online]. 1999 [accessed February 8, 2002].  
<[http://www.aad.org/PressReleases/need\\_reason.html](http://www.aad.org/PressReleases/need_reason.html)>
- Anda, R.F., D.F. Williamson, L.G. Escobedo et al. (1990). "Depression and the dynamics of smoking: A national perspective". *JAMA*, 264, 1541–1545.
- Bartecchi, C.E., T. MacKenzie, & R. Schrier (1994). "The human costs of tobacco use". *New Eng J Med*, 330, 13, 907–912.
- Brandon, T.H. (1994). "Negative affect as motivation to smoke". *Curr Dir Psychol Sci*, 3, 33–37.
- Brownson, R.C., M.P. Eriksen, R.M. Davis et al. (1997). "Environmental tobacco smoke: Health effects and policies to reduce exposure". *Ann Rev Public Health*, 1(8), 163–185.
- Burns, D.M. (2000). "Cigarette smoking among the elderly: Disease consequences and the benefits of cessation". *Am J Health Promo*, 14, 357–361.
- Canadian Lung Association. *Lung Facts 1993 Update*. Gloucester, ON: Canadian Lung Association, 1994. <<http://www.lung.ca/copd/intro/definition.html>>
- Centers for Disease Control and Prevention. *Best Practices for Comprehensive Tobacco Control Programs*. Atlanta: U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, National Center for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 1999.
- Clark, M.A., W. Rakowski, F.J. Kviz et al. (1997). "Age and stage of readiness for smoking cessation". *J Gerontol B Psychol Sci Soc Sci*, 52, S212–221.
- Coombs, R.B., S. Li, & L.T. Kozlowski. (1992). "Age interacts with heaviness of smoking in predicting success in cessation of smoking". *Am J Epidemiol*, 135, 240–246.
- Covey, L.S., A.H. Glassman, & F. Stetner. (1990). "Depression and depressive symptoms in smoking cessation". *Compr Psych*, 31, 350–354.
- Ellison, Larry, L. et al. (1995). "Projected Smoking – Attributable Mortality in Canada, 1991–2000". *Chron Dis Canada* [online] 16, 2. Updated July 4, 1996 [accessed February 7, 2002].  
<[http://www.hc-sc.gc.ca/hpb/lcdc/publicat/cdic/cdic162/cd162c\\_e.html](http://www.hc-sc.gc.ca/hpb/lcdc/publicat/cdic/cdic162/cd162c_e.html)>
- Emery, S., E.A. Gilpin, C. Ake et al. (2000). "Characterizing and identifying "hard-core"

smokers: implications for further reducing smoking prevalence”. *Am J Health Promo*, 90, 387–394.

Evans, W., & I.H. Rosenberg. *Biomarkers: The 10 determinants of aging you can control*. New York: Simon and Schuster, 1991. Pp. 63-64.

Fiore, M.C., W.C. Bailey, S.J. Cohen et al. *Treating tobacco use and dependence. Clinical Practice Guideline*. Rockville, MD: U.S. Department of Health and Human Services, Public Health Service, 2000.

Federal-Provincial-Territorial Advisory Committee on Population Health (Canada). *Report on the health of Canadians : technical appendix*. Ottawa: Health Canada, 1996. P. 185.

Glassman, A.H., F. Stetner, B.T. Walsh et al. (1988). “Heavy smokers, smoking cessation and clonidine: Results of a double-blind randomized trial”. *JAMA*, 259, 2863–2866.

Guralnik, J.M., & G. Kaplan. (1989). “Predictors of healthy aging: Prospective evidence from the Alameda County Study”. *Am J Public Health*, 79, 703–708.

Health Canada. “Tobacco Cessation”. *Canadian Tobacco Use Monitoring Survey, Wave 1, February– June 1999*. Ottawa: Health Canada, 1999.

Health Canada. *Smoking cessation: Living smoke free* [online]. Updated January 17, 2001 [accessed February 8, 2002]. <[http://www.hc-sc.gc.ca/hppb/cessation/youth/fact\\_sheets.html](http://www.hc-sc.gc.ca/hppb/cessation/youth/fact_sheets.html)>

Health Canada. (1996). *Deaths in Canada due to smoking* [online]. January 1999, updated November 23, 2001 (accessed February 7, 2002). <<http://www.hc-sc.gc.ca/english/media/releases/1999/9907ebk6.htm>>

Henningfield, J.E., L. Gopalan, & S. Shiffman. (1998). “Tobacco dependence: Fundamental concepts and recent advances”. *Curr Opin Psychiatr*, 11, 259–263.

Husten, C.G., D.M. Shelton, J.H. Chrismon et al. (1997). “Cigarette smoking and smoking cessation among older adults: United States, 1965–94”. *Tob Control*, 6, 161–163.

International Union for Health Promotion and Education. *The Evidence of Health Promotion Effectiveness: Shaping Public Health in a New Europe*, Brussels, 1999.

Kaiserman, M.J. (1997). “The cost of smoking in Canada, 1991”. *Chronic Diseases in Canada*, 18 (1), 13–19.

Kviz, F.J., M.A. Clark, K.S. Crittenden et al. (1994). “Age and readiness to quit smoking”. *Prev Med*, 23, 211–222.

LaCroix, A.Z. et al. (1991). “Smoking and mortality among older men and women in three communities”. *New Eng J Med*, 324, 1619–1625.

Lindsay, Colin. *A portrait of seniors in Canada, third edition*. Ottawa : Statistics Canada, Cat. No. 89-519-XPE, 1999. P. 66.

Lindsay, Colin. *Canada's seniors: Statistical snapshots of Canada's seniors*. Ottawa: Health Canada, Division of Aging and Seniors, 1999.

McDonough, P., & R.J. Moffatt. (1999). "Smoking-induced elevations in blood carboxyhaemoglobin levels". *Sports Med*, 27, 5.

McGinnis, M.J., & W.H. Foege. (1993). "Actual causes of death in the United States". *JAMA*, 270, 18, 2207–2212.

Miller, V.P., C. Ernst, & F. Collin. (1999). "Smoking-attributable medical care costs in the USA". *Soc Sci Med*, 48(3), 375–391.

Morgan, G.D. et al. (1996). "Reaching midlife and older smokers: Tailored interventions for routine medical care". *Prev Med*, 25, 346–354.

National Institutes of Health. Osteoporosis and Related Bone Diseases. National Resource Center. *Smoking and bone health* [online]. 1999 [accessed February 8, 2002]. <<http://www.osteoporosis.gov/docs/87.356914114.html>>

National Institute on Drug Abuse. *Addicted to nicotine: A national research forum*, July 27–28. Bethesda, MD : 1998.

Nova Scotia Department of Health. *Health effects of tobacco use: how will smoking impact on the lives of today's young Canadians?* [online]. September 1999 [accessed February 11, 2002]. <[http://www.gov.ns.ca/health/tcu/health\\_effects.htm#3](http://www.gov.ns.ca/health/tcu/health_effects.htm#3)>

Orleans, T.C. (1997). "Reducing tobacco harms among older adults: A critical agenda for tobacco control". *Tob Control*, 6, 167–180.

Orleans, C.T., C. Jepsen, N. Resch et al. (1994). "Quitting motives and barriers among older smokers. The 1986 Adult Use of Tobacco Survey revisited". *Cancer*, 74, 2055–2061.

Ossip-Klein, D.J., S. McIntosh, C. Utman et al. (2000). "Smokers ages 50+: Who gets physician advice to quit?" *Prev Med*, 31, 364–369.

Physicians for a Smoke Free Canada. *Tobacco in Canada* [online]. September 1999 [accessed 7 February, 2002]. <[http://www.smoke-free.ca/Health/pscissues\\_health.htm](http://www.smoke-free.ca/Health/pscissues_health.htm)>.

Prummel, M.F., & W.M. Wiersinga. (1993). "Smoking and risk of Graves' disease". *JAMA*, 269, 479–482.

Rigotti, N.A., & R.C. Pasternak. (1996). "Cigarette smoking and coronary heart disease: Risks and management". *Cardiol Clin*, 14, 51–68.

Rimmer, B.K. et al. (1990). "The older smoker: Status, challenges and opportunities for intervention". *Chest*, 97, 547–553.

Rowe, J., & R. Kahn. *Successful Aging*. New York: Dell Publishing, 1998.

Ruchlin, H.S. (1999). "An analysis of smoking patterns among older adults". *Med Care*, 37, 615–619.

Special Committee on Aging, United States Senate. *Developments in aging, 1986*. (3rd. ed.). Washington, DC: USGPO, 1987. p. 10.

Svanborg, A. (1996). "Conduct of long-term cohort sequential studies". In S. Ebrahim, & A. Kalache, eds. *Epidemiology in old age*. London: BMJ Publishing Group. Pp. 57-67.

The World Bank. *Curbing the epidemic: Governments and the economics of tobacco control*. Washington, DC: The World Bank, 1999.

U.S. Centers for Disease Control. (1993). "Physician and other health-care professional counseling of smokers to quit—United States". *MMWR*, 42, 854–857.

U.S. Department of Health and Human Services, Centers for Disease Control and Prevention, Tobacco Information and Prevention Source. (August 1999). *Best practices for comprehensive tobacco control programs*. <<http://www.cdc.gov/tobacco/bestprac.htm>>

U.S. Department of Health and Human Services. *The health benefits of smoking cessation: A report of the Surgeon General*. Atlanta, GA: Department of Health and Human Services, 1990.

U.S. Department of Health and Human Services. *Reducing tobacco use: A report of the Surgeon General*. Atlanta, GA: Department of Health and Human Services, Centers for Disease Control and Prevention, National Centre for Chronic Disease Prevention and Health Promotion, Office on Smoking and Health, 2000.

Wetter, D.W., & T.B. Young. (1994). "The relation between cigarette smoking and sleep disturbance". *Prev Med*, 23, 3, 328–334.

Winstanley, M., S. Woodward, & N. Walker. *Tobacco in Australia : facts and issues*. 2<sup>nd</sup> ed. Melbourne : Victorian Smoking and Health Program, 1995.

World Health Organization. *Active ageing: From evidence to action*. Geneva: World Health Organization, 2000.

Zhu, S.H., T. Melcer, J. Sun et al. (2000). "Smoking Cessation with and without assistance: a population-based analysis". *Am J Pre Med* 18, 305–11.