

The Silent Killer: Environmental Tobacco Smoke

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Killing 53,000 Americans each year,¹ exposure to environmental tobacco smoke (ETS) is the third largest preventable cause of death in the United States, exceeded only by direct smoking and alcohol-induced deaths. Besides the preventable adult deaths from cancer and heart disease, the health of children is adversely affected in a variety of ways by ETS. Several preventive interventions exist for family physicians.

The Lung Cancer Risk

Three major reviews have been published regarding the health effects of ETS, also known as involuntary smoking. The 1986 Surgeon General's report,² a 1986 review by the National Academy of Sciences,³ and a review paper published in Britain in the same year⁴ all linked ETS to lung cancer in nonsmokers. A recent draft document from the US Environmental Protection Agency considered the lung cancer association with ETS by means of a meta-analysis, and concluded that ETS should be listed as a group A (known) carcinogen, causing about 3700 deaths each year from lung cancer.⁵ About 12,000 deaths from other cancers are also associated with exposure to ETS.¹

Carcinogens are present and abundant in ETS. Mainstream smoke contains over 4000 identified substances, approximately 4 dozen of which are carcinogenic. ETS, which is composed of sidestream smoke from smoldering cigarettes, exhaled mainstream smoke, and other components that escape from cigarettes during smoking, contains many of these toxic and carcinogenic substances. Still other components in ETS are either cocarcinogenic tumor initiators or tumor accelerants. Sidestream smoke contains a higher concentration of some of these carcinogens than mainstream smoke, including the volatile amines and the nitrosamines. Ben-

zene, tobacco-specific nitrosamines, and radioactive decay products such as polonium-210 are also present in ETS.^{2,3,5}

Cardiovascular Disease

A January 1991 article in *Circulation* by Glantz⁶ is the most definitive look to date at the relationship between passive smoking and heart disease. In the review of 11 epidemiologic studies of the association between ETS and heart disease, it was found that ETS is associated with 37,000 deaths annually from heart disease. Several mechanisms of disease were discussed. An increase in platelet aggregation caused by ETS was noted, as were compromised oxygen supply and demand. There was also strong implication of ETS in atherogenesis caused by catecholamine release, among other factors.

Respiratory Disease in ETS Exposed Children

Physicians who care for children have long been aware of the clinical evidence linking parental smoking with a variety of respiratory diseases in children. Many studies have confirmed the relationship between ETS and these illnesses in children.^{2,3,5} It should be standard practice for physicians to inquire about exposure to cigarette smoke in cases of recurrent childhood bronchitis, pneumonia, asthma, or ear disease including both serous effusions and otitis media. Childhood exposure to ETS has been linked with increased emergency department utilization for respiratory complaints, increased hospitalizations due to these illnesses, increased absenteeism from school, and increased health care costs. These problems are especially troublesome in very young children and in those who were born prematurely or who were of low birthweight.

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The Preventive Role of Family Physicians

First, education of parents about the dangers of ETS to their children should be routine, beginning in the prenatal period. Other teachable moments (which also present an opportunity for a smoking cessation intervention) include the time of a baby's birth, during well-child examinations, and during any episodes of intercurrent illness that might be related to ETS. Parents should be advised that no smoking whatsoever should occur indoors. The gas phase of ETS tends to distribute itself equally throughout an indoor environment. The suspended particulate toxins are also found mixed in the air in areas remote from the actual smoking.

Many family physicians are consultants to local businesses and industries about employee health and safety. The opportunity for educational intervention may present itself in this setting, allowing the family physician to act as an advocate for clean indoor air in the workplace.

In the case of indoor tobacco smoke pollution, the community itself is a vehicle for the spread of disease, and an appropriate place for physician intervention. Environmental tobacco smoke exposure in public and private buildings is a public health problem. Smoking should not be a matter of free choice when it imposes health risks on

the nonsmoking majority. Concerned family physicians can help protect their patients by initiating and actively supporting local and state legislation that mandates clean indoor air in the workplace and in public areas such as restaurants and shopping malls. Involvement by local physicians is quite effective in countering opposition by the tobacco industry to such ordinances. The medical community should help establish public policy that sustains public health by preventing exposure to this silent killer.

References

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