

# Surgeon General: Secondhand Smoke Is Never Safe

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The science is now anything but hazy: Secondhand tobacco smoke causes premature death and disease in children and adults who don't smoke—and there is no safe exposure level, the U.S. surgeon general warned in a comprehensive new report.

In a return to a public health issue last addressed in a 1986 surgeon general's report, the nation's top physician found significant progress in the campaign to reduce Americans' exposure to secondhand smoke. But new scientific evidence in the intervening 20 years strengthens the links between involuntary smoking and a host of harmful cardiovascular, respiratory, and reproductive effects.

In particular, the surgeon general's report cautioned that exposure to secondhand smoke increases nonsmokers' risk of developing heart disease by 25%-30% and their risk of developing lung cancer by 20%-30%.

In addition, the home is surpassing work as the primary source of secondhand smoke exposure—a trend that poses special danger for children, who are at increased risk for sudden infant death syndrome, ear problems, asthma, and acute respiratory infections.

As a result, physicians "should routinely ask about secondhand smoke exposure, particularly in susceptible groups or when a child has an illness caused by secondhand smoke, such as pneumonia," U.S. Surgeon General Dr. Richard H. Carmona stated in his 709-page review, "The Health Consequences of Involuntary Exposure to Tobacco Smoke: A Report of the Surgeon General."

## Clearing the Air

The new report acknowledges that the secondhand smoke picture has cleared significantly since the last look at the topic 20 years ago.

Thanks to the spread of smoke-free environments at work sites and other public places, levels of cotinine, a biologic marker for secondhand smoke exposure, have fallen in nonsmokers by 70% since the late

1980s. The proportion of nonsmokers with detectable cotinine levels has been halved from 88% in 1988-1991 to 43% in 2001-2002.

Nonetheless, nearly half of all non-smoking Americans are still regularly exposed to secondhand smoke, and children's median cotinine levels were more than twice those of adult nonsmokers.

The California Environmental Protection Agency highlighted secondhand smoke's human toll in a 2005 study cited by the U.S. surgeon general. Exposure resulted in an estimated 3,400 deaths annually from lung cancer, 46,000 deaths from cardiac-related causes, and 430 deaths attributed to sudden infant death syndrome.

More than 50 carcinogens have been identified in sidestream and secondhand smoke, and there is sufficient evidence that exposure in nonsmokers causes a "significant increase" in urinary levels of metabolites of the tobacco-specific lung carcinogen NNK, or 4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone.

## The Cardiorespiratory Costs

Two decades of new data further cement the causal links connecting secondhand smoke to cardiovascular and respiratory disease.

Sufficient evidence now exists to infer a causal relationship between secondhand smoke exposure and lung cancer in lifetime nonsmokers—a conclusion that extended to all secondhand smoke exposure, regardless of location.

In contrast, the study data supporting a causal link between secondhand smoke exposure and breast cancer are suggestive but not sufficient.

The evidence is sufficient to back a causal link between secondhand smoke and increased risk of coronary heart disease, although the report deemed the evidence of increased risk of stroke or atherosclerosis as "suggestive but not sufficient."

**Sufficient evidence now exists to infer a causal relationship between secondhand smoke exposure and lung cancer in lifetime nonsmokers.**

Among people with asthma, the evidence is suggestive but not sufficient to infer a causal relationship between secondhand smoke exposure and acute respiratory symptoms such as cough, wheeze, chest tightness, and difficulty breathing.

The evidence was also suggestive but not sufficient to draw a causal link between exposure and an acute decline in lung function and short-term secondhand smoke in people with asthma.

The data supporting a causal link between secondhand smoke and risk for chronic obstructive pulmonary disease were deemed suggestive but not sufficient, while the report said that the evidence was "inadequate" to infer the presence or absence of a causal relationship between exposure and morbidity in patients with chronic obstructive pulmonary disease.

## Pediatric Impact

Because of young children's high levels of exposure, secondhand smoke should be considered a significant pediatric issue, according to the report. The pediatric findings were especially stark regarding mothers who smoke.

In its 2005 report, Cal/EPA estimated that, nationwide, secondhand smoke exposure resulted annually in between 24,300 and 71,900 low-birth-weight or preterm deliveries, about 202,300 episodes of childhood asthma (new cases and exacerbations), between 150,000 and 300,000 cases of lower respiratory illness in children, and about 789,700 cases of middle ear infections.

According to the U.S. surgeon general's report, the evidence is sufficient to infer a causal relationship between secondhand smoke exposure from parental smoking and sudden infant death syndrome, as well as lower respiratory illnesses in infants and children.

Sufficient evidence also exists to infer a causal relationship between parental

smoking and middle ear disease in children, including acute and recurring otitis media and chronic middle ear effusion.

For childhood asthma, a causal relationship was found between secondhand smoke exposure from parental smoking and the onset of wheeze illnesses in early childhood. However, the evidence was only suggestive of a causal relationship between secondhand smoke exposure from parental smoking and the onset of childhood asthma.

The latest data on lung growth and pulmonary function showed a causal relationship between maternal smoking during pregnancy and persistent adverse effects on lung function during childhood. Exposure to secondhand smoke after birth was also linked to a lower level of lung function during childhood.

## Seeking Solutions

To prevent these risks, the surgeon general said, the smoke must be stopped—everywhere. Creating separately ventilated rooms is not an answer to preventing exposure, and the use of typical air cleaning strategies is also not sufficient.

"The only way to protect nonsmokers from the dangerous chemicals in secondhand smoke is to eliminate smoking indoors," according to the report.

Arguments that such no-smoking policies would cripple the hospitality industry carry no weight in the surgeon general's report. Assessing the evidence demonstrates that "smoke-free policies and regulations do not have an adverse economic impact on the hospitality industry," the report stated.

The report "clearly supports" a pattern that oncologists have long observed, said Dr. Shirish Gadgeel, an oncologist at the Barbara Ann Karmanos Cancer Institute at Wayne State University in Detroit.

The surgeon general's report "absolutely" gives him more clout with patients, he said, adding that some lung cancer patients continue to smoke during treatment.

Now, Dr. Gadgeel said, he can point to the report and say that smokers are putting the health of their "near and dear ones" at risk by continuing to smoke. ■

## FDG-PET Helps Focus Lung Cancer Therapy

SAN DIEGO — Combining <sup>18</sup>fluorodeoxyglucose PET scans with CT images may supply the best information for maximizing treatment planning in patients with non-small cell lung carcinoma, a multicenter French study showed.

The approach results in "a better definition of nodal disease and tumor extent, especially in cases of atelectasis," Dr. Francesco Giammarile said at the annual meeting of the Society of Nuclear Medicine. "In our study, the approach to radiotherapy was modified in about 40% of patients."

Dr. Giammarile, of the Centre Léon Bérard, Lyon, France, and associates evaluated 120 men and 28 women with NSCLC. The mean age of patients was 61 years, and 77% had stage IIIA or higher disease.

To define the gross clinical and target volumes, the researchers first used CT data only, followed by coregistered FDG-PET/CT data. They designed

treatment plans with the CT data, but they left open the possibility for treatment modifications based on what the combined FDG-PET/CT data showed.

Dr. Giammarile reported that combined FDG-PET/CT provided additional diagnostic information in 61% of patients and showed unexpected tumor localization in 42%. Of these, 8% were at extrathoracic metastatic sites.

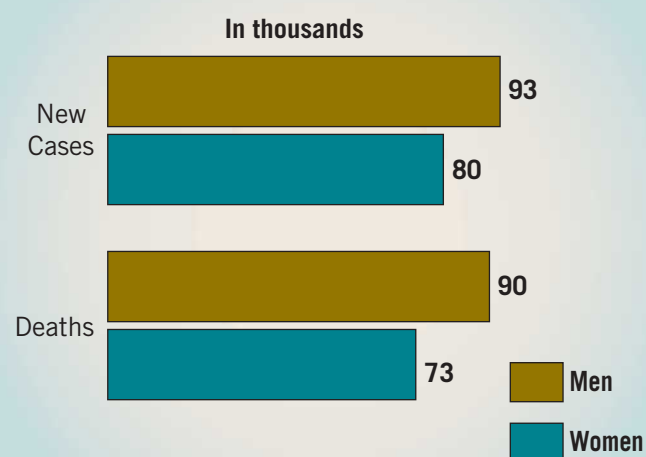
In 26% of cases, there was no pathologic uptake at known disease sites. "Four patients were thus shifted from radical to palliative radiotherapy for metastatic disease or very large tumor size," the researchers wrote in their abstract. The switch resulted in an estimated per-patient savings of 490 euros in additional treatment costs, or about 616 U.S. dollars.

The study was supported by a grant from the French Ministry of Health.

—Doug Brunk

## DATA WATCH

### U.S. Lung Cancer Projections for 2005



Source: American Cancer Society