CD Summary

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SMOKE GETS IN YOUR EYES (AND LUNGS)

In the recently released Surgeon General's Report[1] on the effects of involuntary exposure to tobacco smoke, three facts about secondhand smoke (SHS) stand out: 1) there is NO safe level of exposure to SHS; 2) exposure among adults has immediate adverse effects on cardiovascular function and, over the longer-term, causes coronary heart disease and lung cancer, among other illnesses; and 3) workplaces are a significant source of SHS exposure for adults. This *CD Summary* describes recent findings on SHS in the places where some Oregonians work, and discusses strategies clinicians can use to address this threat to their patients' health.

BACKGROUND

Oregon's Indoor Clean Air Act was initially implemented in 1981 and amended by the legislature in 2001. It requires all workplaces and indoor public places to be smoke-free, with the exception of: bars and bar areas of restaurants that are posted as off limits to minors; tobacco retailers; bowling centers; hotel rooms; and licensed bingo halls. An estimated 35,000 Oregonians work in jobs where there is no legal protection from SHS, and 17% of nonsmoking adult Oregonians report being exposed to SHS at work in a typical week (2005 BRFSS).†

In addition, the 2001 law preempts local jurisdictions in Oregon from enacting local ordinances that are more stringent than the state law. Communities that had already passed comprehensive smoke-free workplace ordinances prior to 2001 were "grandfathered" in. As a result, Corvallis, Eugene, and Philomath have the distinction of being the only communities in Oregon where *all* workplaces are smoke-free.

To understand better the extent of SHS exposure in Oregon workplaces, the American Cancer Society, in partnership with the Oregon Public Health Division, recently conducted the Air Monitoring Project (AMP) to study indoor air quality in bars and bar-restaurant combinations throughout Oregon. Specifically, the AMP measured particulate matter less than 2.5 microns in diameter ($PM_{2.5}$). These particles are produced by combustion and, when found indoors, usually come from burning cigarettes.

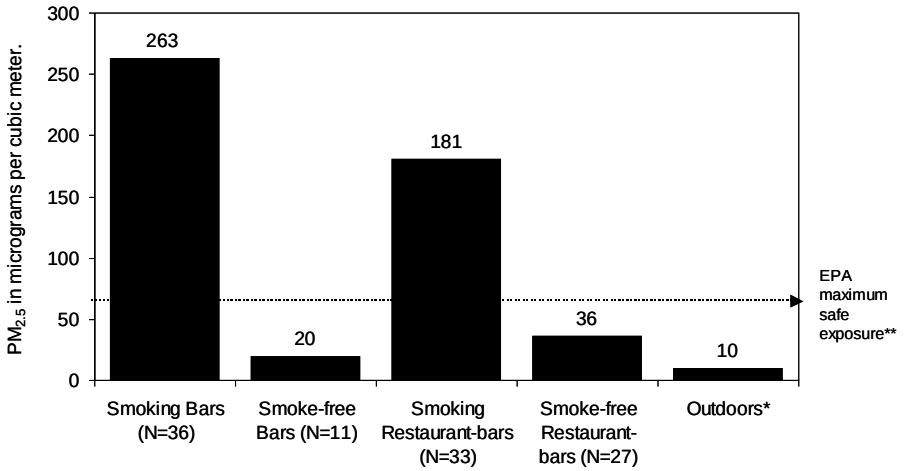
Physiologically, $PM_{2.5}$ can be an irritant itself, and can also carry other toxins and carcinogens deep into the lungs.[2] These particles are so miniscule that they often bypass the normal filtration mechanisms of the nose and throat. The Environmental Protection Agency sets air quality standards for $PM_{2.5}$. These standards were used as the benchmarks for the AMP study.

SHS AROUND OREGON

Volunteers measured $PM_{2.5}$ in communities all over Oregon. Two, Corvallis and Eugene, with local smoke-free ordinances, and others (including Bend, Coos Bay, Hillsboro, Medford, Oregon City, Pendleton, Portland, Salem and Springfield) without local ordinances. Air samples were collected from 107 smoking and non-smoking establishments in March 2006. Concentration of $PM_{2.5}$ was automatically measured using TSI SidePak AM510 Personal Aerosol Monitors, which were discreetly concealed in volunteers' bags and purses.

The figure shows the results. Bars and bar/restaurants that allowed smoking had levels of $PM_{2.5}$ that were 5 to 12 times higher than those that didn't allow smoking,

Average Level of Indoor Air Pollution in Tested Oregon Establishments by Type of Venue



* 2006 Average for Oregon (Washington, Jackson, Multnomah and Lane Counties). 2006 US EPA AirData report generated April 7, 2006 from *http://www.epa.gov/air/data/*.
** EPA maximum safe 24-hour exposure (65µg/m^3).

† The Behavioral Risk Factor Surveillance System (BRFSS) is an ongoing random-digit dialed telephone survey of adults designed to measure health practices and risk behaviors. See our website at *http://www.dhs.state.or.us/dhs/ph/chs/brfs/index.shtml*.

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and often exceeded the maximum safe level for such particulates.

Bars and bar/restaurants in Corvallis and Eugene tested well within EPA safe standards. These data support the notion that local smoke-free ordinances are effective in protecting workers from secondhand smoke. Other voluntary smoke-free establishments also had low $PM_{2.5}$ levels.

Another recent study[3] of SHS in Oregon workplaces reinforces the results of AMP. In it, metabolites of the tobacco-specific lung carcinogen NNK (*4-(methylnitrosamino)-1-(3-pyridyl)-1-butanone*) were measured in the urine of two groups of nonsmoking workers. Thirty-two of the study participants worked in communities in which smoking is prohibited in all workplaces, and 52 were exposed to SHS in the workplace. Neither group had any other notable exposure to SHS. About 3 out of 4 employees in non-protected work- places had evidence of NNK biomarkers in their urine, compared to less than half of the protected workers. In fact, as the hours worked in smoky environments increased, so did the concentration of the carcinogen in the workers' bodies.

Exposure to SHS is not limited to the workplace. In 2005, 4.8% of non-smoking Oregonians reported that someone had smoked‡ in their home in the past 30 days, and 2.4% reported that smoking in the home occurred daily.

WHO IS EXPOSED

An estimated 18,000 nonsmoking women in Oregon of childbearing years aged 18 to 44 years are exposed to SHS in their workplaces.§ For those who are pregnant, simply working in a smoky environment elevates their risk of delivering a low birthweight baby. Evidence also suggests that SHS exposure may increase risk of breast cancer in younger, primarily pre-menopausal women.[4]

Also disproportionately affected are members of some minority groups. African Americans, American Indians, Native Hawaiian and Pacific Islanders, and Hispanics are much more likely to be employed in service occupations.[5] Conversely, national data indicate that, with the exception of African Americans, people in these groups are less likely to have access to health care and preventive services.[6]

CLINICAL IMPLICATIONS

The findings of the Surgeon General's Report, coupled with the evidence of particulate and carcinogen exposure in worksites where smoking occurs, raise the stakes for assessment of patients for SHS exposure and its associated ills. Identifying those exposed and educating them about the damage it causes can help them protect themselves and advocate for their own health in their workplace.

Discussing the new evidence with patients who smoke may also tip the scales in favor of a smoke-free policy at home or in the family car (a potential benefit for both children and nonsmoking adults) and could add an incentive to quit.

The Surgeon General's Report also provides added motivation for health care facilities to extend indoor smoke-free policies to include their outdoor areas. You can review the Executive Summary of the Surgeon General's Report at *http://www.cdc.gov/tobacco*.

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‡ Tobacco...

§ 2005 BRFSS.