RADON RISK FOR LUNG CANCER BACK IN THE SPOTLIGHT

A recent study in the *BMJ* (2005;330:223–228) serves as a potent reminder that smoking isn’t the only factor physicians and patients should consider when discussing lung cancer risk. European researchers report that exposure to radon gas in the home accounts for about 9% of lung cancer deaths and about 2% of overall cancer deaths in Europe.

The findings are based on an analysis of 13 case-control studies of residential radon and lung cancer involving 7,148 lung cancer patients and 14,208 control subjects. The authors, led by Sarah Darby, PhD, of the Clinical Trials Service Unit and the Epidemiological Studies Unit of Radcliffe Infirmary, Oxford, UK, assessed lung cancer risk based on measurements of household radon and personal characteristics such as smoking history, age, sex, and area of residence.

Radon is an odorless, colorless, flavorless radioactive gas that arises naturally from the breakdown of uranium in the earth. Because it emanates from soil, it is found throughout the environment. Outdoors, radon amounts are so small that they pose virtually no risk; indoors, however, the gas can become concentrated. Over time, breathing radon exposes the lungs to radiation that can increase the risk of lung cancer.

Darby and colleagues calculated that lung cancer risk increases by 8.4% for every 100 Becquerels per cubic meter (Bq/m³). The US Environmental Protection Agency (EPA) recommends taking action to remediate indoor radon when the gas reaches concentrations of 4 picocuries per liter (pCi/L), which is equivalent to 148 Bq/m³.

“These results are consistent with those of earlier studies, including one from the United States,” said Elizabeth Ward, PhD, Director of Surveillance Research for the American Cancer Society (ACS). “But this study has larger numbers of people resulting in greater statistical power and better ability to separate the results of radon exposure from the results of smoking.”

The European group found that the increase in relative risk of lung cancer for every 100 Bq/m³ of radon was similar for smokers and nonsmokers. However, the absolute risks of lung cancer associated with radon exposure are much greater...
among smokers. For example, among non-smokers exposed to 800 Bq/m³ of radon, the lifetime risk of developing lung cancer by age 75 is about 1%, about double the absolute risk among individuals with no radon exposure (0.5%). Among current smokers of 15 to 24 cigarettes a day, the absolute risk of developing lung cancer after 800 Bq/m³ radon exposure is about 22%, about double the risk in smokers not exposed to radon (10%).

The risks of radon have been known for decades and were based primarily on studies of miners exposed to extremely high levels of the gas while working underground. Calculating the potential risks to the general public is more difficult because radon exposure is highly variable depending on where people live and what type of residence they occupy—radon levels vary according to soil type and concentrations tend to be greater in lower levels of a home, such as the basement.

The EPA has recommended radon testing in homes for years, and in January 2005 the US Surgeon General issued a national health advisory on the subject. The advisory said radon is the second leading cause of lung cancer in the US (smoking is first) and causes more than 20,000 lung cancer deaths in the country each year. Venting systems can be installed in homes to lower indoor radon levels and reduce the risk.

“It would be good for doctors to talk to their patients about the risks of radon,” Ward said, “particularly in those parts of the country where the potential for radon exposure in homes is high.”

The EPA estimates that 1 in 15 US homes have excessive levels of radon. The agency provides a county-by-county map of estimated radon levels on its Web site at http://www.epa.gov/iaq/radon/zonemap.html. Consumer information describing the risks of radon, home modifications to lower the risk, and ways to find qualified contractors to perform the work are available at http://www.epa.gov/iaq/radon/pubs/index.html. The booklet *A Physician’s Guide—Radon: The Health Threat with a Simple Solution*, developed by the EPA and the American Medical Association, is also available online at http://www.epa.gov/radon/pubs/physic.html.

**IN-OFFICE FOBT INACCURATE, BUT WIDELY USED**

Two studies recently published in the *Annals of Internal Medicine* (2005;142:81–85 and 86–94) show that in-office fecal occult blood testing (FOBT) is still widely used in the United States, despite being highly inaccurate and not recommended by any professional guidelines for colorectal cancer screening.

In a survey of 1,147 physicians analyzed by researchers from the ACS, the US Centers for Disease Control and Prevention (CDC), the National Institutes of Health, and the University of North Carolina at Chapel Hill, nearly 33% said they use this method exclusively to screen asymptomatic, average risk patients for colorectal cancer. Yet the test detects fewer than 5% of colorectal cancers, according to researchers with the Department of Veterans Affairs.

Those findings point to a “disturbing pattern of low-quality fecal occult blood testing and follow up, indicating that millions of adults are undergoing testing that, for the most part, is entirely worthless,” said Robert Smith, PhD, director of cancer screening for the ACS and coauthor of the report on doctors’ use of in-office versus take-home tests.

The ACS recommends colon cancer screening for all adults at average risk starting at age 50. A yearly fecal occult blood test (FOBT) is one of the acceptable screening methods—but only when the multisample take-home kit is used. FOBT performed on a single stool sample taken during a rectal exam is not considered an adequate, or acceptable, substitute.

The Veterans Affairs study shows clearly why in-office FOBT poses a problem. This study compared the two methods of FOBT—a