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Ex-smokers, light smokers not exempt from lung damage

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People who smoke fewer than five cigarettes a day cause long-term damage to their lungs, according to a new study led by researchers at Columbia University Vagelos College of Physicians and Surgeons.

"Many people assume that smoking a few cigarettes a day isn't so bad," says study leader Elizabeth Oelsner, MD, a Herbert Irving Assistant Professor of Medicine at Columbia University Vagelos College of Physicians and Surgeons. "But it turns out that the difference in loss of lung function between someone who smokes five cigarettes a day versus two packs a day is relatively small."

The researchers looked specifically at lung function—the amount of air a person can breathe in and out—in smokers, ex-smokers, and never-smokers. Lung function declines naturally with age (starting in one's 20s), and it's well-known that smoking accelerates the decline.

Because of the large number of people in the study—more than 25,000—Oelsner and her colleagues could see differences in lung function among light smokers (30) that other studies have been unable to detect.

Their analysis found that lung function in light smokers declines at a rate much closer to that of heavy smokers than non-smokers. [Compared to the rate of decline in a never-smoker, set to zero for the analysis, the additional decline for light smokers is 7.65 mL/year and 11.24 mL/year for heavy smokers].

That means that a light smoker could lose about the same amount of lung function in one year as a heavy smoker might lose in nine months.

"Smoking a few cigarettes a day is much riskier than a lot of people think," Oelsner says. "Everyone should be strongly encouraged to quit smoking, no matter how many cigarettes per day they are using."

After quitting, lungs don't fully recover

The study also tested an assumption, based on a 40-year-old study, that

the rate of decline in lung capacity "normalizes" within a few years of quitting smoking.

The new study shows that although lung capacity declines at a much lower rate in ex-smokers (an extra 1.57 mL/year compared with nonsmokers) than current smokers (an extra 9.42 mL/year), the rate doesn't normalize (reach zero) for at least 30 years.

"That's consistent with a lot of biological studies," Oelsner says. "There are anatomic differences in the lung that persist for years after smokers quit and gene activity also remains altered."

Light smokers and COPD

Smoking's effect on lung function explains why smokers are more likely to develop chronic obstructive pulmonary disease (COPD), which is diagnosed when lung function dips below a certain threshold.

Light smokers may have a greater risk of developing COPD than most researchers have realized, Oelsner says. Most COPD studies have looked only at smokers with heavier habits (>10 pack years).

"We probably need to expand our notions of who is at risk," Oelsner says. "In the future, if we find therapies that reduce the risk of developing COPD, everyone at increased risk should benefit."

The study, "Lung function decline in former smokers and low-intensity current smokers: a secondary data analysis of the NHLBI Pooled Cohorts Study," was published online Oct. 9 in *The Lancet Respiratory Medicine*.

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