

# Editorial: Gene damage linked to smoking

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It's a remarkable fact that although lung cancer is directly linked to smoking, the disease was almost unheard of 100 years ago. Tobacco has been in circulation since the 1600s, yet as late as 1912, fewer than 400 cases had been reported worldwide. In the 1920s, medical students were still summoned when lung cancer was found in a patient, the condition being so rare.

Today, unfortunately, the picture has changed completely. Around 20,000 Canadians alone died of lung cancer last year, and death rates are sky-high in many Third World countries.

Part of the explanation for this public-health calamity lies in the way tobacco use has changed over time. Before mass production became possible in the 1880s, cigarettes were in short supply.

Pipes were the favored utensil, but they produced a harsh smoke that was unpleasant to inhale. In contrast, modern cigarettes are more easily tolerated, and for that reason, more dangerous.

All of this is common knowledge, of course. That cigarette smoking brought with it an epidemic of lung cancer has been obvious for some decades.

But scientists are beginning to suspect that behind the direct, visible link, something more ominous may be going on. One clue is the large number of non-smokers who get the disease.

Nowadays, between 10 and 15 percent of lung cancer deaths occur in people who have never used tobacco. In B.C., that translates to 300 fatalities annually. Even 50 years ago, that would have stunned the medical world.

Without question, many of these “innocent” deaths are due to the impact of second-hand smoke, though most developed countries have aggressive laws against lighting up in public places.

However, in just the last year or two, a series of studies, some involving Canadian researchers, has revealed a chilling new possibility. It appears that parents who smoke may be passing on to their children genetic mutations caused by the habit. If true, that opens up an entirely novel form of disease transmission.

There is an important distinction to draw here. It’s well known that cancer is linked to certain genes, and that in some families, those genes are passed along from one generation to the next. Variations of the BRCA1 gene are a cause of hereditary breast cancer.

But what these recent studies show is that smoking injures healthy genes, and that these newly damaged genes can be handed down from parent to child.

Like any emerging field of knowledge, the research is not complete and these findings may not stand up. It’s also unclear whether offspring who inherit this damage will go on to become lung-cancer victims themselves.

What can be said so far is that the genetic damage occurs in areas of the human DNA chain that are linked to serious ailments. These include brain cancer and leukemia, and possibly also lung cancer.

There are profound moral as well as medical implications at stake here. Adults who smoke already know the risks they take

with their own well-being.

But now it appears they could be jeopardizing the health of any children they may have. Playing dice with your own life is one thing. Playing with the safety of an unborn generation is another matter entirely.

It will have to be seen exactly what this line of research uncovers. But the results are already sufficiently troubling to warrant a broader debate.

Smoking remains legal in Canada, in part, because it was thought the risks could be contained. Now it seems that may not be the case.

Whether an outright ban is desirable, or even practical, is still perhaps in question.

But at a minimum, there are some new victims whose interests we must consider.