

FOCUS

The disturbing truth about cellphones

MARTIN MITTELSTAEDT

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Is that cellphone at your ear giving you cancer? U.S. public-health advocate and epidemiologist Devra Davis takes a close look at the science of cellphones in her new book, *Disconnect*, and discovers that while researchers haven't yet found a definitive answer, there are chilling clues that these ubiquitous devices are far from benign.

Tumours on the rise

Several studies, including an exhaustive review released this year by the World Health Organization's cancer-research agency, find that people who have used cellphones for half an hour a day for more than a decade have about twice the risk of glioma, a rare kind of brain tumour, on the side of their head where they hold the phone. Glioma is usually fatal. Dr. Davis says brain cancers typically take decades to develop, and the fact that they're being found after 10 years in cellphone users after relatively light exposure by today's usage standards is worrisome. "For such a risk to show up in cellphone users within 10 years given what we know about brain tumours, which is that they can have a latency of 40 years, is deeply, deeply disturbing," she said in an interview.

Your brain on microwaves

Cellphones operate on microwaves, sent and received by antennas on the back of the devices. Some people compare holding these phones to pressing tiny microwave ovens next to our heads. Nearly everyone is exposed to cellphone radiation: There are an estimated five billion subscriptions worldwide.

There is no doubt that more powerful types of radiation – think X-rays – cause cancer. But microwaves, known as non-ionizing radiation, were long thought to be benign because they weren't strong enough to bump electrons from atoms. Nonetheless, Dr. Davis writes that experiments indicate these waves do pack a biological punch. **Rats exposed to just two hours of**

microwave radiation had broken strands of DNA, the damage known to occur in cancer. The rats also had brain-cell alterations, memory lapses and fluids leaking from their brains into their blood, indicating a breach of the blood-brain barrier.

Safe for whom?

Dr. Davis writes that cellphone-safety tests are based on the amount of radiation absorbed into the head of man who is in the top 10 per cent of U.S. military recruits, a 200-pounder with an 11-pound brain standing at 6 feet, 2 inches. The standards were based on early analog phones used no more than six minutes at a time, not the digital models now in use. They were set to prevent the head from overheating. The tests don't account for the smaller head sizes of women and children.

Don't touch that phone

According to the fine print of the safety and product information brochure accompanying every cellphone, pressing the phone to your ear is a no-no, Dr. Davis writes. BlackBerry instructions, for example, couldn't be more explicit. The phones should be used in a hands-free operation if available and people should "keep the BlackBerry device at least 0.98 in. (25 mm) from your body (including the abdomen of pregnant women and the lower abdomen of teenagers) when the BlackBerry device is turned on and connected to the wireless network."

Safer cellphone use

- * **Using headsets and wireless gadgets such as Bluetooth** cuts the amount of radiation to the brain.
- * **Store your cellphone in a backpack or purse.** Or, if you must carry it mounted on your belt, turn the keypad to face your body because the antenna is on the back. Because radiation drops exponentially by distance from the antenna, holding devices away from the body cuts doses dramatically.
- * Don't sleep with your cellphone on next to the bed or under a pillow.
- * Pregnant women should keep the phones away from their abdomen.

* Talk in an area with good reception. Poor reception increases the radiation dose because the phones must power up to send the signal.

* Children should text instead of speaking on the phone, and limit use to emergency situations.

Tobacco, asbestos and cellphones

“Science on this complicated topic remains uncertain, for two reasons. First of all, science is truly complex and not easily understood by most of us. **But a very large part of that uncertainty on this issue has been manufactured by those with deep pockets whose bottom line remains their primary focus.**

Many of those engaged in efforts to study cellphone radiation have ... made up their minds in advance. The fact that ready money has been there to support those who cast doubt on the dangers of radio-frequency radiation certainly plays some role in the perpetuation of their views, as it did with tobacco, asbestos, benzene, and hormone-replacement therapy.” – from *Disconnect*

Out with the old science

“Cellphones have become as essential to modern life as cars and trucks and jet planes. We spend billions of dollars, euros, yen and won making vehicles safer for us to drive or fly in and checking to see if they are safe as used. We need to do the same things with cellphones. Rather than parroting assurances of safety based on old science, outmoded theories of physics, and bullied scientists, we need to invest in cellphones' safety as we do with other modern technologies.

“Of course, more research is needed. On that we are all agreed. But the need for research should not be allowed to become an excuse to carry on as though everything is fine, until we have incontrovertible proof that it is not.”
– from *Disconnect*

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May 17, 2010

Heavy use of cell phones may increase tumour risk: study

By Martin Mittelstaedt
Globe and Mail Update

Interphone study reviewed 5,100 people diagnosed with brain cancers in 13 countries, including Canada

The most exhaustive investigation ever undertaken into brain cancer risk from cell phones suggests that heavy users may be at an elevated risk of developing the tumors, a finding that is likely to continue fueling health concerns over the popular electronic gadgets.

The study, dubbed Interphone, found that that people who reported chatting on the phones the equivalent of a half an hour a day over 10 years had an elevated risk of a rare and often deadly brain cancer known as glioma, the type that last year felled U.S. Senator Ted Kennedy, although the researchers concluded their evidence is not strong enough to link the devices to the disease.

The frequent users had a 40 per cent higher risk of glioma, compared to people who never used the phones, as well as about twice the risk of developing tumors on the same side of their heads where they normally held their mobiles while talking, or where most of the energy emitted by their phones would be absorbed.

The results were based on a review of cell phone use among more than 5,100 people diagnosed with brain cancers in 13 countries, including Canada, Japan, Germany and Israel from 2000 to 2005, well before the recent explosion in mobile usage, a factor that worries researchers.

"I think these results are of concern because the study subjects were light users compared to today," commented Elisabeth Cardis, the study's lead author and a professor at the Centre for Research in Environmental Epidemiology in Barcelona.

While Dr. Cardis said the research on possible harm isn't conclusive, she said taking a precautionary approach of reducing exposure to cell phone radiation "might be a reasonable course of action until stronger conclusions can be drawn around the risks."

The peer reviewed research was coordinated by the International Agency for Research on Cancer, the UN's respected cancer watchdog, and is being published Tuesday in the International Journal of Epidemiology. Dr. Cardis, a Canadian who headed IARC's radiation group during much of the period of the

study, is one of the first prominent epidemiologists to suggest caution when it comes to cell phones.

But IARC concluded that the study didn't confirm a link between cell phones and brain cancer, although the finding of increased risk among heavy users and the rapid growth in the amount of time people spend on their phones since the research began indicates more investigation is warranted.

"An increased risk of brain cancer is not established from the data," said Christopher Wild, IARC's director, in a statement "However, observations at the highest level of cumulative call time and the changing patterns of mobile phone use since the period studied by Interphone, particularly in young people, mean that further investigation of mobile phone use and brain cancer risk is merited."

The study cost about 19.2 million Euros, with about a quarter of the funding from the mobile industry and much of the rest from government sources. Cell phone companies had no role in designing the research or in vetting its results.

Researchers have been investigating the cancer hazard from phones because using them amounts to placing a small radio transmitter next to the head, exposing the brain and ears to a small dose of microwave radiation.

A paradoxical result found in the research is that moderate or infrequent cell phone users had a reduced risk of about 20 per cent in developing brain cancer, compared to people who shun the devices.

Dr. Cardis said the unusual results - some cell phone use seems to protect against cancer while high use seems to be associated with cancer - might be due to the difficulty researchers had in recruiting controls. These are people without cancer who were used in the study as a comparison group to see how they differed in their cell phone usage from those with the tumors.

According to spot checks by the researchers, the people volunteering to be controls appear to have had higher cell phone use than the population at large, suggesting the results could be skewed towards underestimate the risks from the mobile devices.

Because the study began 10 years ago and cell phones have become much more popular since then, many of the people in the high use category wouldn't be considered particularly heavy mobile chatters by today's standards. Most people reported only about 2 and a half hours of phone use a month, or a lifetime total of 100 hours. The heaviest users were classified as those who had a lifetime tally of more than 1,640 hours on the phones.

The average Canadian has usage of 6.7 hours a month, and would end up in the high risk group after about 20 years. **There are approximately 23 million wireless subscribers in the country, or 70 per cent of the population, according to figures**

provided by the Canadian Wireless Telecommunications Association, an industry, trade group.

Given that even IARC is calling for more research in the wake of the results, the study hasn't changed the highly polarized views on cell phone safety. The wireless industry maintains that there are no reasons for any concern. But independent analysts aren't convinced because there has also been a hint in some previous studies that long term users face elevated brain cancer risks, although other studies haven't found any harm.

"There is no way" this will end the controversy over cell phones, contends Louis Slesin, editor of Microwave News, an independent newsletter that tracks research into the biological effects of radiation. "I don't think that anyone challenges that there is uncertainty here."

But that isn't the view in the mobile industry. With cell phones operating below radiation safety standards set by governments "there is no risk for human health issues," says Marc Choma, spokesman for the Canadian Wireless Telecommunications Association.

Besides glioma, the researchers also tracked the incidence of meningioma, a slow-growing brain tumor that is often benign. Heavy users also had a 15 per cent elevate risk of contracting it, compared to people who don't use cell phones.

Based on the reasoning that other cancers in the head and neck might be caused by exposures to cell phones, the scientists also looked at the incidence of acoustic neurinoma, a cancer of the inner ear, and salivary gland tumours. The studies on them are to be released later.

Critics of cell phone safety have likened the devices to holding a small microwave oven up to the head, but government safety standards limit the amount of energy discharged to such low levels that people can't feel their heads being warmed slightly by the radiation.

Health Canada has played down safety worries and according to its Web posting on the issue says the radiation from cell phones "poses no confirmed health risks."

May 20, 2010

Cellphones and cancer: watch that thing by your head

The Globe and Mail

It is an open question whether cellphones can cause cancer. Panic is not indicated. But neither is denial.

It is an open question whether cellphones can cause cancer. This is a very large open question in a world with 4.6 billion cellphone users. The answer to such uncertainty is caution about extensive use, especially among children.

Panic is not, as doctors like to say, indicated. But neither is denial. Cellphone use in cancer patients was studied in 13 countries, including Canada, and the results were published this week in the International Journal of Epidemiology. The cancer patients were divided into 10 groups, by time of use. In the group that used cellphones the most - more than 1,640 hours over 10 years, or 30 minutes a day - the risk of developing the rare form of brain cancer known as glioma was elevated by 40 per cent. In the other nine groups, there was no extra risk; in fact, there were fewer cases overall in these nine groups than in control groups.

The study's authors, led by Elisabeth Cardis, formerly of the University of Ottawa, say the findings are inconclusive. The elevated risk could have been caused by flaws in the study. No one is saying moderate cellphone use protects against brain cancer.

But these cellphone users are not representative of today's world. **Thirty minutes a day hardly constitutes the top 10 per cent any more. And some of those who use them more than that in Canada, and elsewhere, are children as young as eight or nine.**

There's another cause for concern, too. **Cellphone users were studied only over the short term. "If it turns out that cellphones cause brain cancer, but in a 15- to 20-year time period before the tumours manifest themselves clinically, we would not have been able to pick this up,"** says Jack Siemiatycki, the Canada Chair in Environmental Epidemiology at the University of Montreal.

The difficulty is that it's hard to ensure safety before the evidence is in; and it's hard to get the evidence before many people are exposed. "There are innumerable conceivable dangers to society, from genetically modified foods to pesticides to traffic problems and urban air pollution and global warming," he says. Society doesn't insist on halting progress until the dangers can be confirmed.

Our world is one of innumerable subtle dangers. Cellphone use may be one of them.

"Who would argue against being cautious with kids?" Dr. Siemiatycki says. "But you could say that about kids eating apples with pesticide residue or kids playing in parks where strangers might wander." (We could and would say that.) "There are any number of things where parents should be cautious. I would be concerned if my 12-year-old son was using a cellphone for two hours a day every day by his head."

It will be years until more conclusive research is available. Until then, add cellphones to the list of things to be cautious about, particularly in the hands, and near the developing brains, of children.