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Smartphones, Calling All Germs

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SAUSALITO, CA (ASRN.ORG) -- When you combine a cellphone's proximity to your ears, nose and mouth with its bacteria-loving warmth, the result can be harmful to your health. This hazard, says Jeffrey Cain, chief of family medicine at Children's Hospital Colorado, often goes unnoticed. "Some things we think are personal are actually more public than we imagine." Bacteria from a phone can cause flu, pinkeye or diarrhea, says Dr. Cain.

For people who want to keep a clean touch screen, there is a disconnect between what doctors and medical researchers advise and what device makers suggest for phone sanitizing.

While products are marketed specifically for mobile-phone cleaning, they can sometimes damage the phone's screen coating or fail to remove 100% of the germs.

Even though computers, keys, pens and landline phones can harbor germs, many people's cellphones have become extra appendages—never far from the pillow, health club treadmill or restaurant table.

In This Issue

- [Making RNs Sensitive To Surrogate Decisions In The ICU](#)
- [Smartphones, Calling All Germs](#)
- [What Would Mitt Do As President?](#)
- [What The Health Of The Mother Means](#)
- [Four Days Of Silence](#)

Archives

- [May 1, 2018](#)
- [April 1, 2018](#)
- [March 1, 2018](#)
- [February 1, 2018](#)
- [January 1, 2018](#)
- [December 1, 2017](#)
- [November 1, 2017](#)

"We're feeding the little creatures," says Michael Schmidt, a professor and vice chairman of microbiology and immunology at the Medical University of South Carolina. "We've all seen that greasy smear [on the touch screen]. Where there is grease, there are bugs."

A lab tested eight randomly selected phones from a Chicago office for this article. The phones showed no signs of E. coli or staphylococci bacteria. But all phones showed abnormally high numbers of coliforms, a bacteria indicating fecal contamination. Of the eight phones tested by HML Labs of Muncie, Ind., there were between about 2,700 and 4,200 units of coliform bacteria. In drinking water, the limit is less than 1 unit per 100 ml of water.

"The results are pretty bad," said Dr. Donald Hendrickson, president of HML Labs and professor emeritus of medical microbiology at Ball State University. He says the results suggest a lack of hand-washing and proper hygiene.

HML then tested four different cleaning methods, including water, alcohol, Windex Original glass cleaner and Nice 'N Clean electronic cleaning wipes. Alcohol performed best, cleaning nearly 100% of the bacteria. Plain water proved to be the least effective method of the four.

Emily Evitt, 29, who lives in Culver City, Calif., and works as an intellectual property attorney, says she wipes down her computer keyboard and work phone each morning, but she hasn't found a solution for her iPhone that both cleans well and won't harm the screen.

"I see people at the gym with their iPhones and think, 'Ugh,' " says Ms. Evitt, who avoids taking her phone to the gym but brings it with her to work lunches. Ms. Evitt's husband, Mark, who founded a website called The Manly Housekeeper, wipes down the couples' phones with alcohol on the back cover and with water on the front.

People are just as likely to get sick from their phones as from handles of the bathroom," says Dr. Cain.

"These are the unintended consequences of new technology that we haven't seen before so we don't know all the risks yet," he says.

Phone companies caution against using most household cleaners—which can leave phone owners like Ms. Evitt in a bind.

"It's really problematic because a lot of manufacturers don't tell you what coating is on the phone," says Dr. Schmidt. "It's hard to tell if an alcohol wipe will strip the oil-repellant coating and damage the phone screen." Screenmaker Gorilla Glass, a provider to more than a dozen smartphone brands, says one of its screens has an easy-to-clean coating that will "survive repeated wiping."

An Apple spokeswoman directed a reporter to the customer manual, which explicitly forbids the use of "window cleaners, household cleaners, aerosol sprays, solvents, alcohol, ammonia or abrasives." BlackBerry's advice is similar. Its manual states: "Do not use liquid, aerosol cleaners, or solvents on or near your BlackBerry device." A spokesman for Google Inc.'s Android says the various manufacturers for its phone platform don't carry an official policy on cleaning methods. Company representatives for the Android, BlackBerry and iPhone smartphones all said that they don't have particular brands to recommend for cleaning.

October 1, 2017

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December 1, 2016

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Boh Ruffin, a senior applications engineer at Corning Gorilla Glass, says standard off-the-shelf cleaning products, such as alcohol wipes, won't degrade the performance of the glass, though he wouldn't speak to smartphones' performance directly.

"The only thing that's going to affect the glass is some type of hydrochloric acid," says Mr. Ruffin. "Microfiber cloths work great to remove oil and dirt."

Such phone-cleaning cloths usually boast about a 99% success rate, which Dr. Schmidt says isn't good enough. "For some of the bacteria, you only need to ingest as few as 10 organisms to get sick."

There is scant research on cellphone germs and their effect on the body, according to Dr. Cain. One 2011 study sampled the cellphones of 100 college students and discovered them to be "veritable reservoirs of pathogens" that can make you sick. The study authors, from the University of Cape Coast in Ghana, noted the high concentration and diversity of bacteria on the phones. A study published last year warned that some 20 to 30% of viruses can be readily transferred from a fingertip to a glass surface, like that on a touch screen.

Standing outside the Apple Store on Michigan Avenue, Marci Hollandsworth, a mother of four and self-described Purell hand sanitizer devotee from the suburbs of Chicago, says her family passed around a series of infections all summer, including several colds and pinkeye.

She believes the culprit was the family's four cellphones. "It's really disgusting," she says. "We are big Windex people for our iPhones and iPads. Anything that will sanitize our gadgets but not smell like a janitor's closet, we use."

A spokeswoman for S.C. Johnson, which makes Windex, notes that its glass cleaner isn't recommended for electronics, though they do offer a line of cleaners intended specifically for electronic devices.

Derek Meister, a tech support agent from retailer Best Buy's Geek Squad, suggests a UV disinfectant wand as the best cleaning solution because its light rays kill germs without touching the phone. Creators of a new product called PhoneSoap say it uses UV-C light to clean the phone while charging it, and that the device will begin shipping to consumers in January 2013.

New industry solutions may also be in the works. A start-up in Aurora, Colo. is using microscopic patterns that mimic shark skin—known for its unique design that is more resistant to bacteria than other animals' skin. The company, Sharklet Technologies, is working on products for medical devices, furniture and countertops, but aims to release phone products by the second half of 2013.