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Electromagnetic Compatibility - Cellular Phone Interference

November 1, 1995

UPDATE ON CELLULAR PHONE INTERFERENCE

WITH CARDIAC PACEMAKERS

Background

Recently published studies performed on patients at the Mayo Clinic in Rochester, Minnesota and at the Mount Sinai Medical Center in Miami Beach, Florida, as well as laboratory studies in the U.S. and Canada, have shown that when some cellular phones are placed very close to implanted cardiac pacemakers, interference with the pacemaker's normal delivery of pulses can occur. Although FDA is not aware of any actual incidents in which cellular phones have caused people's pacemakers to malfunction, the agency is concerned about this possibility, and is conducting its own laboratory studies. So far, FDA's results agree with those of the other preliminary studies.

The nature of the problem

The type of interference under study is called "electromagnetic interference", or "Emi" If it were to occur, it could affect the pacemaker in one of three ways: by stopping the pacemaker from delivering the stimulating pulses that regulate the heart's rhythm; by causing the pacemaker to deliver the pulses irregularly; or by causing the pacemaker to ignore the heart's own rhythm and deliver pulses at a fixed rate.

This would pose a health hazard for the very small minority of pacemaker wearers who are "pacemaker dependent" -- that is, who depend heavily on their pacemakers to maintain the heart's rhythm. It would be of less concern for the vast majority of pacemakers wearers, who are not dependent.

What do we know so far?

- EMI disruption of normal pacemaker function seems to occur only with cellular phones using digital technology, not those using analog technology. Most U.S. cellular phones are the analog type and thus would not affect pacemaker function. But digital phones are becoming more popular.
- When the digital phone is turned off or moved outside the pacemaker's disturbance range, the interference stops and the pacemaker resumes its normal operation.
- For most digital phones, and for most pacemakers now in use, EMI does not have an effect if the phone is more than about six inches from the implanted pacemaker. Thus the operation of

these pacemakers would not be disturbed with the phone used in the normal talking position. However, some newly emerging pacemaker designs may be more sensitive to electromagnetic interference. FDA has tested these new designs, and has provided the results to pacemaker manufacturers. FDA is also working with the manufacturers to help assure that new products will be less susceptible to electromagnetic interference.

Precaution for pacemaker wearers

Based on these preliminary findings, cellular phones would not seem to pose a significant health problem for the vast majority of pacemaker wearers. Still, people with pacemakers may want to take some simple precautions to be sure that their cellular phones don't cause a problem. For example, holding the phone to the ear opposite the side of the body where the pacemaker is implanted will add some extra distance between the pacemaker and the phone. And since cellular phones transmit electromagnetic energy whenever they are "on" (even when they are not being used), pacemaker wearers might want to avoid placing a turned-on phone next to the pacemaker implant - that means not carrying the phone in a shirt or jacket pocket directly over the pacemaker. [Other Cell Phone Information](#)

Updated September 10, 1997

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