

Cell phone use in the dialysis clinic: Is it time to review?

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ONE SATURDAY MORNING, A VERY UNUSUAL TRAFFIC jam occurred on the highway. I was trapped in gridlock and had no way of arriving to the clinic on time. Fortunately, I had my cell phone with me. Calling the nurses at my renal unit, I explained my desperate situation. I guided them through the necessary technical items that we, as renal technicians, are used to taking care of. I gave them my cell phone number in case any further help was necessary.

A vastly different experience, however, occurred during an interesting medical conference lecture. A delegate sitting behind me received a cell phone call blasting the annoying tune of "Old MacDonald had a farm, ee-eye, ee-eye oh." This was amusing to some, but disruptive and disturbing to the speaker and delegates. This often occurs despite the warnings we hear from conference chairs to switch off all cell phones at the session start.

Staying permanently connected seems of vital importance to some people! Cell phones allow us to talk to anyone from everywhere, but these two anecdotes demonstrate that a cell phone can be either extremely valuable or a nuisance. A cell phone is, in fact, a practical example of high technology, available in everybody's pocket. If you wish to learn about the real capabilities of this tool, I recommend reading the tutorial "How cell phones work."¹

Quiet, Please

When we enter our renal clinics, we are kindly requested to switch off cell phones. This rule applies to patients as well. The rationale for this general directive is that cell phone signals produce electromagnetic waves which interfere with radio transmitters of nearby equipment and disturb their correct function—with potential attendant risks.² When you switch your cell phone on in the vicinity of a computer, you can hear this interference from the monitor.² For an excellent physics lesson on radio frequency waves and some of their misconceptions, read Dr. Gilfor's interesting tutorial.³

Recently, three major changes in cell phones have occurred. First, the new generation of digital cell phones interfere less with medical equipment than the initial analogue ones.¹ Second, medical equipment is now protected by shields from electromagnetic waves³—a necessary precaution against interference from other wireless communication tools used in health care environments. Third, the performance of the new

generation of cell phones has improved significantly, thanks to increased power.²

The ban on the use of cell phones in renal units was recently discussed on the Renalpro online discussion forum.⁴ Tests performed in the United Kingdom and the United States demonstrated that dialysis equipment was not very sensitised to cell phone interference. One of the participants commented that most people ignore the cell phone ban in their hospital—especially staff. Another participant warned that the use of cell phones would interfere with the venous air detector of Cobe Centry 3 dialysis machines. A few dialysis clinics already allow cell phone use by staff and patients, and no problems have been reported.

Where do we stand now?

Last month, a renal clinic in Switzerland using Gambro machines experienced systematic ultrafiltration errors. While these problems were occurring, it was noted that a group of young patients were chatting with friends and sending messages on their cell phones throughout their dialysis session. Similar ultrafiltration errors were not observed among other groups of patients without cell phones, dialysed on the same type of machine in the same clinic. Tests revealed that one cell phone close to a dialysis machine did not interfere,

whereas several cell phones used simultaneously did.

Airlines also prohibit the use of cell phones on planes. Research reveals that a single cell phone is not a problem. It is rather the sum of electronic interference from different sources, which varies over time and between airports, that can interfere with airplane instruments.⁵

Modes of conduct are necessary

Analogue radio receivers used by emergency services,² security radios used by hospital workers,² and mobile computers⁵ are welcomed in hospitals, even though they produce much higher electromagnetic interference than cell phones. They should remain at a distance of more than three meters

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from any medical equipment.⁶ Cell phones should be kept at least two meters away from medical equipment, a general rule already implemented in Australian hospitals.² As a practical example, patients with permanent pacemakers are taught to use their cell phone in the hand opposite to the site of implantation.⁷

The higher the power of a cell phone or close proximity to medical equipment, the greater the possibility of interference, which is inversely proportional to the square of the distance from its source. This means that when distance is doubled, the electromagnetic radiation is reduced by 75%.³ Thus, the use of cell phones should in fact be permitted rather than prohibited in offices or in patients' rooms, in any place where no medical equipment is in operation, and where other people are not disturbed.

Conclusion

The current ban on cell phones in renal clinics is not justified. It is based on old data and should be reconsidered. Cell phones have certainly made the life of doctors, nurses, and technicians more comfortable and efficient—especially when on call. Our decision makers should realise the enormous benefit of cell phones to patients, suffering sometimes from loneliness when hospitalized.⁷ Banning use of their cell phone is like cutting the umbilical cord of contact with family, friends,

and business. The cell phone has become a very personal toy with several important functions.⁷ Australian decision makers² are clearly on target. ■

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