



## Potential for Mobile Services to Interfere with Medical Equipment

*At separations greater than 1-2m the possibility of mobile phones causing interference to medical devices is substantially reduced. It is technically possible for mobile phones to be used in designated areas of hospitals, however, warning signs and the instructions of hospital staff should be obeyed. The GSMA is not aware of any confirmed reports of interference to medical electronics by base stations on hospital rooftops.*

### Use of Mobile Phones Near Medical Equipment

A small minority of medical equipment may experience interference from nearby electrical and radio devices including 2-way radios and mobile phones (cellphones). At distances greater than 1 to 2 m the possibility of interference to medical equipment, is substantially reduced. A 1997 study in the UK found '*...only 4% of devices suffered interference from cellphones at a distance of 1m, with less than 0.1% showing serious effects.*'

Neither the Medicines and Healthcare products Regulatory Agency for the UK nor the American Medical Association currently support blanket bans on mobile phone use in hospitals. Both organizations encourage hospitals to develop local rules to minimise the risk of interference to medical equipment. Some hospitals request that all visitors and medical staff turn off their mobile phones when entering the facility, while others restrict usage only in specified areas.

### Mobile Communications Base Stations

The 2<sup>nd</sup> and 3<sup>rd</sup> generation base station antennas on hospital rooftops direct most of their signals outwards, resulting in low signal levels within the hospital building. The 1997 UK report concluded:

*Cellular base stations (the arrays of aerials on the roofs of tall buildings which relay mobile phone messages to the telephone system) are unlikely to interfere with medical devices, unless they are exceptionally sensitive...*

The GSMA is not aware of any confirmed reports of interference to medical electronics by base stations on hospital rooftops. In addition, in-building antenna





systems can be designed to ensure that mobile phones in hospitals operate significantly below their nominal maximum power and this would further reduce potential interference risks.

### **Relevant Standards and Guidance**

The current international (IEC) standard for medical devices specifies immunity levels (80-2500 MHz) of 3 V/m (non-life support) and 10 V/m (life support) equipment. Some items of older equipment may not achieve these levels of immunity and other items will have substantially greater immunity. A recent ISO technical report provides recommendations for the management of possible interference in health care facilities and can assist in dialogue between hospital authorities and the designers of wireless communications systems.

### **GSM Association Position**

At separations greater than 1 to 2m the possibility of interference by mobile phones to medical electronics is substantially reduced. It is technically possible to use mobile phones in designated areas of hospitals, but the public should obey any warning signs and the instructions of hospital staff. If electrical medical equipment is used at home, the GSMA recommends seeking the advice of medical staff or the equipment supplier. The GSMA is not aware of any confirmed reports of interference to hospital electronics by base stations antennas on rooftops.

### **Where to go for more information**

American Medical Association, *H-215.972 Use of Wireless Radio-Frequency Devices in Hospitals*: <http://www.ama-assn.org/>.

GSM Association, *Information on Potential for Interference to Electronic Devices*, January 2006: [http://www.gsmworld.com/using/health/health\\_papers.shtml](http://www.gsmworld.com/using/health/health_papers.shtml).

IEC 60601-1-2:2001, Medical electrical equipment – Part 1-2: General requirements for safety -Collateral standard: Electromagnetic compatibility-Requirements and tests: <http://www.iec.ch/>.

International Organization for Standardization, *Health informatics -- Use of mobile wireless communication and computing technology in healthcare facilities -- Recommendations for the management of unintentional electromagnetic interference with medical devices*, ISO/TR 21730:2005: <http://www.iso.org/>.

Medical Devices Agency, *Electromagnetic Compatibility of Medical Devices with Mobile Communications*, MDA; London, Devices Bulletin DB 9702, March 1997 and Medicines and Healthcare products Regulatory Agency (MHRA), *Frequently asked questions on the use of mobile phones in hospitals*, 17 May 2006: <http://www.mhra.gov.uk/>.

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