



Context

Reliance on the use of cellular telephones and similar wireless communication devices has become pervasive in our society. From initially being able to send and receive only voice communications, today's mobile wireless communication devices are equipped with text messaging capabilities, Internet access, digital cameras, voice recorders, global positioning system (or GPS) functions, customized software applications, portable music players, and more.

When used in health care facilities such as hospitals, these functional and convenient radiofrequency wireless communication technologies contribute to the electromagnetic environment of the facility. There is therefore a need to mitigate potential risks of electromagnetic interference between cell phones and similar wireless communication devices and sensitive medical equipment in clinical health care environments. Health care facilities now need to develop policies that balance a need for effective communication with wireless communication devices, while minimizing risks of electromagnetic interference with critical medical equipment.¹ As cell phones and similar mobile wireless communication devices and medical equipment technologies evolve, these policies will require regular review.

Objectives

The objective of this report is to provide an overview of Canadian tertiary care hospital policies on wireless communication device use. For the purposes of this report, "wireless communication devices" include two-way

radios, cell phones, "smart phones" (e.g., iPhone, Android), as well as wireless personal digital assistants (or PDAs), which among other capabilities can store and/or transmit voice calls, emails, and data messages. Only policies developed and/or revised within the last three years have been included.

Findings

It is not intended that the findings of this Environmental Scan provide a comprehensive review of the topic. Results are based on communication with key informants from the provinces. This report is based on information gathered as of September 2011.

Of the 10 Canadian provinces surveyed, responses were received from eight. Responses from more than one respondent were sought from the larger provinces of Quebec, Ontario, Alberta, and British Columbia. Respondents represented individual tertiary care hospitals, as well as provincial or regional-level health authorities, depending on at what level of the health care system the policies were developed.

Nine respondents indicated that they are currently revising their wireless communication devices policy, and were not able to release the draft document details. Four respondents shared their current policies, which had been revised within the last three years. These policies do not ban the use of wireless communication devices in their health care facilities. Rather, they allow for:

- unrestricted but respectful and privacy-conscious use in designated areas of the hospital, such as waiting areas, lounges, cafeterias, and private offices,

- where there is minimal medical equipment
 - limited use (use within certain designated distances of medical equipment)
 - prohibited use in highly instrumented patient care areas.
- Due to the increased functionality of wireless communication devices, including digital cameras and voice recording

functions, issues relating to patient and staff privacy and confidentiality have also been addressed in recently developed health care facility policies.

The following table summarizes the currently active (i.e., non-draft) wireless communication devices policies provided by survey respondents.

Table 1: Summaries of Wireless Communication Device Policies	
RESPONDENT 1	
<p>The policy applies to all RF transmitting devices physically located in any of the hospital’s campuses, whether they belong to staff, patients, or visitors. The policy defines RF transmitting devices as any device emitting RF energy of sufficient power to transmit signals over controlled frequencies (e.g., cellular telephones, many PDAs [e.g., BlackBerry], wireless local area networks, wireless video cameras, pagers, and walkie-talkies). It is the policy to control the use of RF transmitting devices in all patient care and diagnostic areas to ensure that applicable technology can be used safely, while preserving patient privacy and minimizing patient care area disruptions. The policy is intended to balance patient privacy and safety needs with the benefits of incorporating emerging mobile technologies into patient care.</p> <p>RF transmitting devices may be used in patient care areas of the hospital as outlined in the following restrictions:</p> <p>Cell phones, other RF-emitting PDAs, companion phones, wireless laptops:</p> <ul style="list-style-type: none"> • must not be used by anyone within 1 metre of a ventilator, fetal monitor, or temperature monitoring/controlling device • must not be used by anyone in operating rooms, cancer clinic and treatment rooms, kidney dialysis areas, labour and delivery units or labour and delivery operating rooms, high-risk antenatal unit areas, and MRI suites • must not be used in rooms where patients are on additional precautions • must not be used by patients and visitors in intermediate (inpatient) and critical care areas, or in any area signed with a cell phone/RF restriction. <p>Camera-equipped cell phones or PDAs: Same restrictions as previously stated. Visitors will have their photographs removed from the device by security or police if they are found taking photographs of patients or staff without their explicit consent.</p> <p>Two-way radios: Only Emergency Services (fire/police), hospital security, and patient transport personnel may use, as required, keeping as far away from medical equipment as is practical (6 to 8 metres). Under emergency conditions, two-way radios may be distributed to selected staff users.</p> <p>Receive-only and two-way pagers: May be used by physicians, staff, patients, and visitors without any restrictions.</p>	

Table 1: Summaries of Wireless Communication Device Policies

RESPONDENT 1 (CONTINUED)
<p>RF transmitting devices may be used in non-patient care areas of the hospital, providing that doing so does not violate others’ need for quiet and privacy, and being courteous and respectful of others; or does not violate any patient’s rights with respect to their privacy and security of their health information; or does not violate any staff member’s privacy by taking a photo without their consent.</p> <p>Appropriate signs limiting or prohibiting the use of RF transmitting devices are posted outside all restricted areas.</p> <p>Any medical device malfunction that may have been caused by interference from an RF transmitting device must be reported immediately to Biomedical Engineering, who will also notify the Risk Manager/Shift Manager, who will follow established procedures.</p> <p>RF devices taken into a patient’s bed space must be treated similarly to other patient equipment, in that the user must perform hand hygiene after using the device and before touching the patient.</p> <p>A patient and visitor brochure on the use of cell phones was developed and made available.</p>
RESPONDENT 2
<p>The policy applies to the use of wireless communication devices such as, but not limited to, cellular phones, pagers, PDAs, or two-way radios by patients, visitors, and all hospital personnel (collectively referred to as “all”). Recognizing that effective and timely communication is essential to the delivery of proper health care, and normal operation of any health care facility, the use of wireless communication devices for mission-critical purposes is allowed within the delineated guidelines.</p> <p>Through appropriate entry signage, all individuals carrying cellular phones and other RF-emitting devices are requested to turn these devices off (note: Not in “standby” mode, in which transmission still occurs periodically).</p> <p>Signage throughout the hospital indicates where cellular phone use is allowed or restricted.</p> <p>Green cellular phone signs identify low-risk areas in which cellular phone use is permitted: These are defined as zones with few medical devices or minimal possibility of RF interference and include lobbies, the cafeteria, waiting areas, private offices, or other areas as designated by the green cellular phone signs.</p> <p>Use of cellular phones is not permitted in high-risk areas designated by red cellular signs: These are defined as areas where a patient may be connected to electromedical equipment (e.g., cardiac monitors, hemodynamic monitors, medical telemetry), any other highly instrumented areas (e.g., clinical laboratories), patient rooms, or other areas as designated by the red cellular phone sign.</p> <ul style="list-style-type: none"> • Two-way radios (walkie-talkies) are to be put in the standby or listening or receive mode when entering direct patient care areas. • They must never be put in talk or transmit mode when in close proximity to a patient. • A separation of 6 to 8 metres from medical devices is required in order to use talk mode, unless, at the operator’s discretion, they are responding to official emergency codes or crisis situations. • Privacy, confidentiality, and security of all personal information with which the hospital is entrusted must always be protected.

Table 1: Summaries of Wireless Communication Device Policies

RESPONDENT 2 (CONTINUED)
<ul style="list-style-type: none"> • Patient or substitute decision-maker consent is required prior to taking any patient images. <p>Any occurrence of unexpected or unusual medical equipment functioning is to be reported to Biomedical Engineering. New equipment purchases require manufacturers to provide evidence of the extent to which their devices conform to current EM susceptibility performance guidelines or standards. Compliance with such standard does not however guarantee a device's immunity to EMI.</p>
RESPONDENT 3
<p>Separate policies are in place for staff use and public use of wireless communication devices. “Restricted areas” for both the staff and public policies are identified as the following heavily instrumented areas:</p> <ul style="list-style-type: none"> • operating rooms • adult, pediatric, and neonatal ICUs • pre- and post-anesthesia care units • resuscitation areas in the emergency department • angiography suites (cardiac, vascular, neurology) • EEG labs • areas where EEG studies are performed • other areas as assessed on a case-by-case basis. <p>Staff policy: The purpose of the policy is to enhance patient safety by managing staff use of wireless communication devices that can interfere with proper operation of certain medical equipment. The policy is also intended to balance obligations to ensure appropriate safety standards are met and to realize the benefits that accrue from the use of wireless communication devices in health care.</p> <p>Wireless communication devices are defined as those devices which intentionally transmit information throughout the air, and are divided into two categories:</p> <ul style="list-style-type: none"> • “Personal wireless communication devices” – designed for day-to-day personal communication (e.g., cellular telephones, “smart phones” [e.g., Blackberry, Palm, iPhone, etc.], and two-way pagers). • “Special application wireless communication devices” – designed for special application (e.g., two-way radios, wireless web-enabled laptops or tablets, cordless telephones, FRS, wireless bar code readers, and radiofrequency identification devices). <p>Facilities staff may use their personal wireless communication devices throughout the facilities, except in restricted areas where limitations apply. Appropriate signs shall be posted at the entrances to restricted areas. In the identified restricted areas, staff may use personal wireless communication devices, but should maintain as much separation distance as possible between the personal wireless communication device and nearby medical equipment; minimally a 1 metre recommended separation distance. In addition, all staff use of personal wireless communication devices will, at all times, follow established facilities policies regarding privacy, misuse of company resources, respectful workplace, intellectual property protection, information and data security, and confidentiality. The vibration or “quiet” feature of the phones shall be utilized by all persons using their wireless communication devices in patient care or waiting areas.</p>

Table 1: Summaries of Wireless Communication Device Policies

RESPONDENT 3 (CONTINUED)

Special Application wireless communication device use may be authorized by Clinical Engineering and other appropriate management, when there is a requirement, following appropriate risk analysis. Two-way radios are only for use by appropriately trained facility staff and emergency service personnel such as fire, police, and paramedic personnel. General contractors or third parties need authorization from Facility Management for each of the facilities' sites.

Public policy: The purpose of the policy is to enhance patient safety by managing wireless communication devices that can interfere with proper operation of certain medical equipment, as well as balance obligations to ensure appropriate safety standards are met and to recognize the public's continually increasing use of wireless communication devices.

Wireless communication devices are defined as those devices which intentionally transmit information throughout the air. Examples of wireless communication devices include cellular telephones, "smart phones" (i.e., Blackberry, Palm, iPhone, etc.), two-way pagers, two-way radios, wireless web-enabled laptops, or tablets and FRS.

The public may use their wireless communication devices throughout the facilities, except in restricted areas where they must be turned off (i.e., powered off, and not left in "stand-by" mode). Appropriate signs shall be posted at the entrances to restricted areas. In patient care or waiting areas, the vibration or "quiet" feature of the phone shall be used. All usage, including photographs or video recording for wireless communication devices having these capabilities, shall be in accordance with existing facilities' policies of privacy, respectful environment, and confidentiality. An education booklet about the wireless communication policy has been developed for staff and public, and shall be available in all patient care areas.

For both staff and public policies: If Clinical Engineering staff become aware of medical equipment whose function has a reasonable probability of being adversely affected by wireless communication devices, the equipment shall be tagged accordingly, clearly indicating a minimum separation distance that shall be maintained between the device and any wireless communication device. If interference between a wireless communication device and a piece of medical equipment occurs or is suspected, the wireless communication device should be turned off immediately or removed from the area, and Clinical Engineering staff are to be appropriately notified.

RESPONDENT 4

Wireless communication devices can be used in any area of the hospital. Increasing the distance between a wireless communication device and potentially susceptible medical equipment greatly reduces the risk of EMI.

Low-power wireless devices (< 1watt and unlicensed), defined as cellular phones, "smart phones" (e.g., Blackberry, iPhone, Palm), Androids (mobile devices), paging transmitters, medical telemetry transmitters, RFID (e.g., Pharmacy), FRS, or two-way radios (< 0.5 watts) **must be kept at least one metre away from susceptible medical equipment** (labelled as such by the Biomedical Engineering Department).

High-power wireless devices (1-5 watts and licensed), defined as GMRS two-way radios (used by maintenance, ambulance, fire, police, taxis, construction crews), **must stay at least 3 metres away from susceptible medical equipment** (labelled as such by the Biomedical Engineering Department).

Table 1: Summaries of Wireless Communication Device Policies

RESPONDENT 4 (CONTINUED)

Any observed malfunction of a medical device shall be reported to Biomedical Engineering.

Wireless communication device etiquette guidelines must be followed, including being mindful of surroundings and speaking quietly without use of abusive and foul language in the presence of others, and ensuring the protection of patient privacy.

A patient information sheet was developed to educate the public, and a staff information sheet was developed to educate staff, on the recently revised policy.

EEG = electroencephalogram; EM = electromagnetic; EMI = electromagnetic interference; FRS = family radio service; GMRS = general mobile radio service; ICU = intensive care unit; MRI = magnetic resonance imaging; PDA = personal digital assistant; RF = radio frequency; RFID = radio frequency identification device.

Conclusion

The majority of the Canadian hospitals surveyed in each of the ten provinces indicated that they are currently revising their wireless communication device policies. Those facilities that have revised their policies within the last three years indicated that use of cell phones and similar devices is not completely banned; however, usage is limited to within certain designated distances from medical equipment, or prohibited in areas that have medical equipment. Generally, respectful cell phone use is permitted in areas of the hospital such as waiting areas, lounges, private offices, and cafeterias having minimal medical equipment. Issues relating to privacy concerns and confidentiality have also been addressed in recently developed health care facility policies.

Complementing this Environmental Scan are two CADTH Rapid Response reports from 2010 pertaining to cellular telephone interference in hospitals and wireless device use in hospitals. These reports are available free of charge on the CADTH website.^{2,3}

References

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