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Perceptions and attitudes of hospital staff toward paging system and the use of mobile phones

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Objectives: Our objective was to document the pattern of mobile phone usage by medical staff in a hospital setting, and to explore any perceived benefits (such as improved communications) associated with mobile phones.
Methods: This cross-sectional survey was conducted in Waterford Regional Hospital, Ireland, where bleep is the official system of communication. All non-consultant hospital doctors, of medical disciplines only, were asked to participate. The questionnaire was designed to explore the pattern and different aspects of mobile phone usage.
Results: At the time of study, there were sixty medical junior doctors, and the response rate was 100 percent. All participants used mobile phones while at work, and also for hospital-related work. For 98.3 percent the mobile phone was their main mode of communication while in the hospital. Sixty-two percent ($n = 37$) made 6–10 calls daily purely for work-related business, and this comprised of $\geq$80 percent of their daily usage of mobile phones. For 98 percent of participants, most phone calls were work-related. Regarding reasons for using mobile phones, all reported that using mobile phone is quicker for communication.
Conclusions: Mobile phone usage is very common among the medical personnel, and this is regarded as a more efficient means of communication for mobile staff than the hospital paging system.

Keywords: Hospital communication systems, Mobile phone

Mobile phones are extensively used by doctors, nurses, and other medical staff for voice calls and Internet connections. Mobile technology can help healthcare providers to improve the quality and efficiency of patient care by meeting their normal and emergency response communication needs (8;11). It can reduce response time demands by efficiently connecting doctors to their colleagues (doctors and nurses) seeking for information and help, making lab test results immediately available, and recording or retrieving patient information on the bedside.

Despite the lack of credible evidence of any harm, either to people or the equipment, and the well established

beneficial role of mobile phone technology for the delivery of healthcare, ban on mobile phone usage continues to be the in place at Irish hospitals. Healthcare providers, especially medical doctors, continue to use mobile phones due to the inherently mobile nature of their clinical practice, although with some hesitancy. Patients are getting in touch with their loved ones either through expensive payphones or use their mobile phones secretly.

Unfortunately, for doctors the most ubiquitous method of communicating within hospitals remains the bleep system. It is a belt-strapped radio box that bleeps when someone is trying to contact by dialing the person's unique bleep code. This provides one-way communication only; either a number is displayed on the bleep screen or a short voice message is conveyed. The receiver then finds a phone and calls back. Each ward in our hospital has two phone sets, placed at the nurses' station and frequently in use. This can be distressing for both doctors trying to respond when the phone is engaged and the people trying to contact them rapidly.

This study was carried out in a regional hospital (537-bed, secondary-care referral centre) in Ireland. In this hospital, a bleep is provided as the official system of communication to all junior medical doctors. However, most medical doctors use mobile phones for work-related business. There is also a general uncomfortable feeling of using mobile phones in the wards and while attending patients.

The research objective was to document the pattern of mobile phone usage by medical staff in a hospital setting, and to explore any benefits (such as improved communication) associated with mobile phones. If it improves communication, then there can be a case of providing a mobile phone to all medical doctors at work; outside or personal calls can be barred, if there is a risk of misuse.

METHODS

All non-consultant hospital doctors of medical disciplines were asked to participate in a self-administered questionnaire study concerning the patterns of mobile phone use. The questionnaire was designed to explore the pattern of mobile phone usage. It inquired about doctors' main mode of communication while in hospital (mobile phone or bleep); whether they use mobile phone at work, and if yes, do they use it for hospital-related work; how much of their daily usage of mobile phone is for work-related business; who do they contact by mobile phones (colleagues, wards, patients, and their relatives). We also asked about main reasons for using mobile phones in hospital instead of bleeps; an estimate of their monthly spending (in Euros) on work-related phone calls; and who pays for their mobile telephone bills. Participants were also inquired if they ever worked in a hospital with a direct phone bleep, and if yes, would they have still used their personal mobile phone as much to place hospital-related calls. The survey also recorded standard demographic information. All participants were briefed regarding the purpose of the survey and verbal consent was obtained before their participation.

Table 1. Junior Hospital Doctors' Patterns of Mobile Phone Use

Question	Number (%) of respondents ($N = 60$)
Main mode of communication in hospital:	
Mobile phone	59 (98%)
Hospital bleep	1 (2%)
Number of daily mobile phone calls for hospital-related work	
0–5	2 (3%)
6–10	37 (62%)
11–15	14 (23%)
>15	7 (12%)
Estimated monthly spending (Euros) on work-related mobile phone calls:	21 (35%)
Up to 20	30 (50%)
21–40	7 (12%)
41–60	2 (3%)
60–80	

Altogether 164 junior doctors worked in our regional hospital. Junior doctors belonging to some disciplines—for example, oncology, palliative care, or orthopedics—provide outreach services to peripheral district hospitals or attend surgical theatres. Such doctors mostly do not carry hospital bleeps and, hence, were excluded from this survey. We targeted all junior medical doctors who remain fully accessible at all times during their working hours through their hospital bleeps.

RESULTS

At the time of study, there were 60 medical junior doctors using bleeps constantly, and the response rate was 100 percent. The mean age of survey participants was 26.8 ± 3.7 years, and sixty two percent ($n = 37$) were male. All participants owned a mobile phone, used this phone while at work, and used it for hospital-related work (Table 1).

For all but one respondent, mobile phone was the main mode of communication while in hospital. Sixty two percent ($n = 37$) would make 6–10 calls daily, purely for work-related business; for them this comprised of ≥80 percent of their daily usage of mobile phones. Ninety two percent ($n = 55$) would preferably contact their medical colleagues for work-related business through mobile phones. For 98 percent of participants, the majority of their daily phone calls were work related.

All described that using a mobile phone is quicker for communication than bleep. Other reasons for using mobile phones were as follows: 55 doctors (92 percent) would use their mobile phone for contacting someone urgently; 25 (42 percent) thought other people do not answer bleeps promptly

or it takes too long to answer; 22 (37 percent) reported that the phone number often was busy when they called back, and it was easier to use mobile to answer back and keep on doing their ward duties. The estimated cost of hospital-related mobile phone calls was more than 20 Euros for most doctors (Table 1). All paid their mobile phone bills personally. Surprisingly, none of the participants had the experience of working in a healthcare system where mobile phones were the official mode of communication.

DISCUSSION

There are limitations to our study. For example, the effects on patient care were not objectively measured, and costs of paging versus mobile phone usage were not assessed. However, we wanted to get a simple snapshot of the opinions of medical doctors regarding their current use and wishes for using mobile phones. Potential effects on patient care, provider workflow and cost need to be investigated separately.

Prevalence of Mobile Phone Usage

Although bleep is the official means of communication in our regional hospital, it was interesting to note that all doctors belonging to medical specialities used mobile phones at work for hospital-related business. This was the main mode of communication for almost all of them, and their daily use was mostly work related. Moreover, all participants thought that using mobile phone was quicker for communication and described different inconveniences of using hospital pager system. The widespread dissatisfaction toward the hospital paging system was primarily due to the communication inefficiencies and staff accessibility, which can have a profound impact on work.

Mobile Phone Use in Hospitals: An Unjustified Ban

Mobile phones are widely used portable electronic devices, and healthcare workers use them for communication in all locations including operating theatres and intensive care units. Ban on mobile phone usage in hospitals has been a tradition because they are considered potentially hazardous in medical environments (5;16). However, research has clearly demonstrated that mobile phones pose little or no risk to hospital equipment (3;5;16): there is potential risk when personnel use mobile phones in close proximity to susceptible machines in different intensive care settings. Studies have found that mobile phones affected only 4 percent of medical devices at a distance of 1 meter—compared with 41 percent for emergency services' handsets and 35 percent for porters' handsets (10;12). In 2009, the British government relaxed the rules and stated that mobiles could be used throughout hospitals except in restricted areas where critical care equipment susceptible to electromagnetic interference is used. Many hospitals, however, continue to completely ban the usage.

Hospital paging system (pagers or bleeps) is not a viable solution to the hospital communication challenge, as most hospitals provide pagers with a facility of one way communication only, without confirmation whether the message is received. The use of mobile phones can officially be permitted in normal wards, corridors and waiting areas. In the context of Irish healthcare system, this has already been tried at few selected sites, and it has worked very well. Similarly, this can be helpful in terms of prehospital care.

Making mobile phones an official mode of communication might also alleviate the anxiety of medical staff for using these phones in clinical practice. For example, the vast majority of our survey respondents expressed unease of using mobile phones while attending patients given the hospital policy of not favoring its use. It could also remove the negative reaction of some members of the public to the use of mobile phones by the hospital personnel.

Advances in Mobile Phone Technology and Clinical Applications

Mobile phones are increasingly multifunction devices. Many advances have been made into the information technology (IT) -related utility of mobile phones; however, health-related utilities have lagged behind. Addition of simple accessories could turn mobile phones into useful medical devices. For example, the digital camera of modern mobile phones can be useful for recording images. Mobile phones already have LCD screens, storage capacity in the SIM cards or external slots for additional cards, a keypad, SMS and MMS capability, Bluetooth technology facilitating printing from any location and some even have a fingerprint identification facility to address the issue of confidentiality and privacy.

With IT-related advances, mobile phone technology is rapidly changing traditional patient care. For example, it has been successfully used in primary care research (4), in home-based health and chronic disease management programs (2;18), to improve attendance at outpatient clinics (7), to transfer medical images to remote doctors (9), for accessing a pharmaceutical database (15), in pre-hospital care (14), and also for remote monitoring of patients in intensive or coronary care units (6;19;20). A recent study compared hospital pagers with wireless cellular devices among intraoperative orthopaedic surgeons and floor nurses, and a significant improvement was noted with cellular phones for communication accuracy and efficiency (13). In Baltimore, USA, a wireless technology for inpatient healthcare delivery has shown to improve nursing workflow and communication (1).

Potential Hazards of Mobile Phones

Potential adverse effects should also be kept in mind, for example, the risk of interference with medical devices; however, current evidence suggests that mobile phone usage poses minimal risk.

Second, mobile phones used by hospital staff are often contaminated with germs, including pathogens that can cause illness in hospitalized patients. In a recent study, swabs were taken from the dominant hand and the mobile phones of 200 doctors, nurses, and other healthcare staff working in intensive care units and operating rooms; it was noted that 94.5 percent of mobile phones were contaminated, often with more than one type of microbe, and often with antibiotic-resistant bacteria (17). When the study participants were questioned about the rate of routine cleaning of their hand sets, approximately 90 percent said they never cleaned their mobile phones. They recommended routine decontamination of mobile phones with alcohol-containing disinfectants.

Third, protection of the information sent over wireless devices/Internet is insufficient; the issues of privacy and confidentiality are paramount . Fourthly, there are certain spots in many hospitals with poor mobile phone signals, causing potential problems for communication. However, this can possibly be addressed with the provision of internal phones.

CONCLUSIONS

Our survey explored the perceptions and attitudes of medical staff toward hospital paging system and the use of mobile phones in routine clinical practice. All medical doctors believed that use of mobile phone enhances patient care and expressed their concerns with the use of hospital paging systems. However, many hospitals ban mobile phones usage, but the basis for this ban is generally vague and unsupported by research. Evidence for beneficial effects of mobile phones on healthcare system is accumulating. The time has come to take up the challenge and innovate around mobile phones to empower healthcare providers with real potential for human development.

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CONFLICT OF INTEREST

All authors report having no potential conflicts of interest.

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