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QUESTION 9: Is there a role for banning all handheld devices/mobile phones in the operating room (OR)?

RECOMMENDATION: Given a lack of evidence correlating increased infection rates/adverse outcomes with the use of handheld devices in the OR, a recommendation to ban these devices in the OR cannot be made at this time. However, regular cleansing of cell phones is an easy and effective practice and should be performed routinely.

LEVEL OF EVIDENCE: Limited

DELEGATE VOTE: Agree: 87%, Disagree: 8%, Abstain: 5% (Super Majority, Strong Consensus)

RATIONALE

Non-medical electronic equipment, such as cell phones, personal digital assistants and wireless media tablets (e.g., mobile handheld devices) have become increasingly integrated into the practice of healthcare workers [1,2]. Previous studies have shown that 33 to 88% of surveyed healthcare workers admit to using cell phones in ORs [1,3,4]. Sergeeva et al. found that mobile devices allow easy information access, e-learning and work-related communication [5]. The potential for these devices to be a source of distraction from the work environment [5], as well as be a nidus for contamination, warrant further examination into whether or not handheld devices/mobile phones should be permitted from the OR.

Phone calls were found to be one of the most frequent distractions in the OR [6–8]. Avidan et al. found that cell phone calls caused short-lived disturbances to the operating surgeons [9]. Murji et al. identified that pager distractions hindered the ability to successfully complete the surgical task in the allotted time and the majority of residents made at least one unsafe clinical decision during the distracted phase [10]. In addition, it has been suggested that ringing telephones are among the major sources of unnecessary noises in the OR [11]. In the study performed in a tertiary care hospital in China, the noise level in the ORs ranged between 59.2 and 72.3 dB, with 100% of the measurements exceeding the recommended hospital noise standards [12].

Excessive noise may have negative effects on patient care and safety. Kurmann et al. showed that ORs with a high noise level also experienced higher surgical site infection (SSI) rates [13]. Simulation-based experiments have identified that noise during surgery can increase feelings of stress, as measured by perceived task load and fatigue levels, [14] cause a decrease in auditory processing function leading to possible miscommunication [15,16] and may impair the ability to accurately monitor pulse oximeter auditory displays [17]. Staff member education on noise reduction strategies (including avoiding conversations on the telephone) have helped to substantially reduce the noise level during the OR procedures [11].

The risk of handheld devices contributing to possible bacterial cross-contamination in the OR must also be discussed. Numerous studies have documented the bacterial contamination of the mobile phones of the healthcare workers [18]. The bacteria species most frequently isolated from the cell-phones (such as coagulase-negative staphylococci and *Staphylococcus aureus*) are known to commonly cause periprosthetic joint infections [1,3,4,18,19]. Genetically identical isolates have been detected from mobile phones and palms and fingers or nares of their users [19,20]. However, it is unknown whether there is a correlation of handheld device contamination with SSI rates, and/or microorganisms causing these infections. In the studies performed in ORs, the mobile phone contamination rate with possible clinical pathogens varied from 0 to 83% [1,3,4,19]. The reason for the large variation of contamination rate may be due to the sampling from different types of handheld devices, different sampling methods, different sampling place and whether coagulase-negative staphylococci have been counted as pathogenic [4,19].

Touchscreen mobile devices have been associated with lower rates of bacterial contamination when compared with traditional keypad alternatives [21]. Shakir et al. reported lower bacterial loads on cell phones with a screen protector [3]. Nevertheless, these devices also need to be regularly decontaminated with approved disinfectant that will not cause damage to the phone [2]. Standardized decontamination protocol significantly reduced bacterial load on the phone [3,4]. In the study by Shakir et al., the contamination rates increased from 8% after disinfection to 75% one week after decontamination, arguing for regular cleaning (several times a week) [3]. The risks of the handheld devices contributing to bacterial cross contamination can be reduced by appropriate hand hygiene. Mark et al. speculated that the higher hand hygiene compliance rates (97%) in their unit could be the reason for lower mobile phone contamination rate [1]. Staff education is essential as the studies indicate that most of the health care workers do not regularly clean their devices or perform hand hygiene before or after use [1–4].

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