D19   Crime Scene Reconstruction in Hospitals Using Wireless Technology

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The goal of this presentation is to illustrate two hypothetical crime scene preservations and reconstructions which were enabled by a hospital's network of telemetry, global positioning systems, radio frequency identification tags and other technological applications. The resultant capabilities of such networks include the tracking and recording of personnel activities, monitoring of equipment location and performance, and the assurance of a secure, precise data trail for events within the clinical environment.

This presentation will demonstrate technology applications have great potential for enhancing and augmenting basic hospital security systems and tracking capabilities, thus serving as a deterrent to criminal activities within the care environment. The highly efficient network of various technologies creates an impressive information and communication trail; even the most ingenious will have difficulty in circumventing or defeating its multiple, interactive and redundant capabilities without leaving behind incriminating evidence in one or more of the permanent memory banks inherent in the system.

The use of wireless devices in hospitals has been stimulated by the need to improve caregiver efficiency, streamline workflow processes, prevent clinical errors, enhance patient safety, and ensure automated documentation of critical events and processes. It was soon appreciated that such systems could provide additional benefits for the facility, including loss prevention of equipment, medications, and supplies and the ability to reconstruct decision-making processes and actions of personnel for retrospective quality review. Furthermore, the budgetary constraints and nurse shortages compelled healthcare administrators to search for communication upgrades in their facilities that could be installed without major retrofitting or reconstruction and permit uninterrupted service delivery. The dynamics and complexities of today's hospitals mandate a flexible, mobile, and easily upgradeable platform for its communication and information systems.

Telemetry and WiFi, wireless local area networks (WLANS), Bluetooth® technology, global positioning systems, and radiofrequency identification combine to create an incredible network for retrieving, analyzing, transmitting, and storing information about patient care activities and processes. The security processes inherent to wireless systems within healthcare possess the capabilities to track caregivers and equipment through the use of a passive RFID tag and possess multi-level safeguards to prevent medical errors, ensure patient safety and precise recording of care-related events. "Plug and play" integration models orchestrate people, processes and technology, bringing together disparate equipment with the care arena. Sophisticated wireless networks can effectively serve as a platform for preserving and reconstructing crime scenes within healthcare settings.

The elements of a hospital's wireless system will be outlined and the capabilities and interactions of components will be explained using clinical simulations. Two case presentations of hospital crime scene reconstructions will be used to illustrate the efficacy of data recovery from the hospital's wireless platform which concretely links the suspect to the criminal behavior. Bar-coding, process flow in a radiofrequency identification system using passive tags, global positioning devices, equipment-imbedded software, and telemetric applications will be described as they relate to evidence preservation and crime scene reconstruction.

Wireless technology applications have great potential for enhancing and augmenting basic hospital security systems, thus serving as a deterrent to criminal activities within the care environment. The highly efficient network of various technologies creates an impressive information and communication trail; even the most ingenious will have difficulty in circumventing or defeating its multiple, interactive and redundant capabilities without leaving behind incriminating evidence in one or more of the permanent memory banks inherent in the system.

Crime Scene, Reconstruction, Wireless Technology