Potential Applications of RFID Technology in Medicine

Paul Fontelo, Fang Liu and Michael Ackerman
Office of High Performance Computing and Communications, National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894

Abstract:
Radio Frequency Identification (RFID) wireless data technology has enormous potential use in medical care. We conducted experiments on possible applications in patient care and medical record tracking, medication delivery, and patient specimen identification. With RFID technology, an electronic tag can store patients' information, diagnosis, treatment, and other ancillary information. These can be accessed instantly within the medical treatment facility. Paper-based records could also be tagged with corresponding information. This will allow easy location within the hospital anytime. Tagged medicine containers can assist nursing care personnel in the timely and accurate delivery of medication that may reduce human errors. These can be done through patient-specific tags in medication containers and handheld RFID readers. RFID tags on specimens could provide accurate patient identification that can follow the patient from admission, surgery and pathology laboratory that may minimize specimen mix-ups. These applications were developed in accordance with the FDA's recommendations for implantable RFID medical devices by addressing issues of confidentiality, integrity, availability and accountability. RFID tags will only contain encrypted patient information, and only authorized RFID readers can read and display patient information. We expect that RFID will find extensive use in hospitals, healthcare centers and centers for elderly care in the future.

Dr. Paul Fontelo, a pathologist, was previously the Chief of Telepathology at the Armed Forces Institute of Pathology. While there, he established the telepathology consultation program using open standards via the Internet. He pioneered the use of the Web for CME with an approved Category 1 CME course in 1994 at the USUHS. His research interests include telemedicine, evidence-based medicine, access to reference sources at the point of care and delivery of medical information in low-resource environments. He is a research physician at the Office of High Performance Computing and Communications at the National Library of Medicine, NIH.