

Title: Impact of isolation for resistant pathogens on barcode technology utilization and medication errors.

Abstract:

Improving patient safety is an issue at the forefront of healthcare. Two major threats to patient safety include the acquisition of infections and medication administration errors. Two major recommendations to increase patient safety in these areas include patient isolation and implementation of barcode medication administration (BCMA) systems, respectively. However, one major study demonstrated that patients in isolation for infection control precautions experience less provider contact and more preventable adverse events compared to patients not in isolation (Stelfox, 2003). Thus, as the incidence of infection or colonization with methicillin resistant staphylococcus aureus (MRSA), vancomycin resistant enterococcus (VRE) and *C. difficile* among hospitalized patients continues to increase (Ramsey 2009, Jarvis 2006, Jarvis 2006), the need for increasing numbers of hospitalized patients to be isolated for infection control prevention will also increase. Given that patient isolation can lead to increased adverse patient outcomes, it may be that the benefits of BCMA systems may be overwhelmed by “workarounds,” or deviations from protocols for BCMA use.

While implementation of BCMA has been shown to reduce medication administration errors, errors still occur, in part because of workarounds (Paoletti 2007, Koppel 2008). In a systematic evaluation of workarounds in BCMA, isolation for infection control was identified as, “a safety procedure incompatible with workflow (Koppel 2008).” However, the impact of workarounds on medication administration errors in the context of isolated patients has not been fully explored.

The objectives of this project are to 1) compare medication administration errors in patients in isolation for infection control with patients not in isolation, 2) review infection control procedures for the use of BCMA, 3) observe utilization of barcode technology in patients in isolation with patients not in isolation using standardized typology for clinicians’ workarounds, and 4) develop recommendations for the use of BCMA for patients in isolation for infection control.

The findings of this project are significant as the number of patients in isolation for infection control increases and the use of BCMA also increases, this issue will affect more patients and will need to be addressed by increasing numbers of hospitals. Our results will be applicable not only to our institution but other hospitals utilizing BCMA for patients in contact isolation.

Our research team is highly qualified and our facility is well suited to conduct this important work. The team consists of pharmacists, physicians, a nurse, a statistician/economist and a graduate research assistant all with experience in infectious diseases, infection control, and epidemiology. Our facility is a large academic medical center which implemented BCMA in 2005. Our experience with BCMA will allow us to observe the use of the devices and adherence to existing policies for disinfection in a setting where end-users are comfortable with the technology. Thus, we will provide realistic evaluation and also useful recommendations for hospitals implementing BCMA systems.