

Investigating Infection Control Behavior in Nurses

Impact of Computer Charting

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Study Overview

The successful completion of this mixed method study will allow us to better understand the use of PPE by nursing staff. It utilizes an inexpensive simulation method which keeps legal and ethical concerns in healthcare to a minimum while uncovering poorly understood human behaviors. This study will expand our previous pilot work (Beam, et al., 2011) for scoring proper PPE use in healthcare workers. Nurses were selected for this initial work because of the frequency with which they provide bedside care in the hospital setting.

Hypothesis

Performance of clinical skills by nurses related to infection control procedures in a simulated environment will increase compliance to clinical standards which will be maintained upon returning to the clinical environment after an extended period of time after the simulation experience.

Theory: Reflective Practice (Donald Schön)

Specific Aims

Specific Aim #1

Identify infection control behaviors by nurses which may or may not adhere to clinical standards for isolation practice while performing clinical skills in a simulated patient care environment.

Specific Aim #2

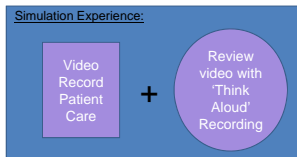
Describe participant rationales for the various infection control behaviors which deviate from standards followed by individual reflections on performance in comparison to the CDC guidelines for isolation care.

Specific Aim #3

Explore the timing of changes in clinical infection control behaviors after simulation participation over an extended period of time.

Study Design

Population: Registered Nurses expected to care for patients in isolation in an Academic Healthcare System who work at least part-time.
Sample Size: 24



Post-simulation data: Collect demographic information, occupational history, and physical characteristics/flexibility assessment.

Sequential Explanatory Design: Simulation reviewed and scored by study team (as per Beam, et al., 2011). Think Aloud recordings qualitatively analyzed.

Long Term Follow Up (at One Month): Emailed questionnaire asking about change in practice.

Video and Data Capture

DSLR & GoPro Cameras

- Exterior and In-room views

Audio Recording

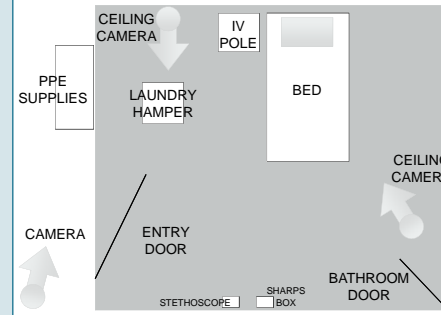
- For "Think Aloud" (Ericsson & Simon)

Data Storage

- Challenges: encryption, file size



Simulation Layout



Further Analysis Needed

- In this study, there was a variance in practice amongst nurses.
- In "Think Aloud" interviews, nurses note different levels of comfort with education provided on COW cleaning. There was also role confusion noted with housekeeping and the task was a low priority when compared to patient needs.

Potential Outcomes

- Guideline for COW disinfection needed:
 - No clear established process for integrating COW use in isolation rooms despite the obvious expectation that nurses are using the device in patient care.
 - Materials need to emphasize the need for personal protection of the nurse while cleaning (encourage glove use) and the potential for contamination of clean areas in the process (encourage hand sanitizing before touching clean surfaces).
- Clinical Challenge:
 - In an airborne isolation room care situation, should a COW ever be taken in and out of a room?
- Issues:
 - Airborne particles are contaminating all surfaces of the device.
 - Full disinfection of the COW with each entry and exit is time consuming and impedes the quality of patient care.

Demographics

- 3 male; 21 female
- 22 White, 2 Asian
- Birth year range: 1952-1989
- 10 of 24 with history of blood borne pathogen exposure
- Various units.

Study Design: COW Use

- The facility's standard computer on wheels (COW) was used for the study.
- Nurses were asked to take COW in and out of the patient room, unless in their unit this was not common practice.
 - 18 of 24 were taken in and out of the room.
- Participants were told to go through the motions of COW use (no actual 'fake patient' in computer system).

Early Findings: Computer Charting Behaviors

Behavior	# of Occurrences
Did not wipe COW	2
COW not controlled on room exit – shoved out door early	3
No gloves for COW disinfection	9
Gloves used for disinfection	7
- Re-glove before exiting room	4 of 7
- Dirty hands used to get gloves from isolation cart	3 of 7



Pilot Work Reference

Beam, E., Gibbs, S., Boulter, K., Beckerdite, M., & Smith, P. (2011). A method for evaluating personal protective equipment technique by healthcare workers. *American Journal of Infection Control*, 39, 415-420.

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ABSTRACT: In a small mixed methods study, nursing behaviors related to infection control were evaluated as nurses participated in a video recorded patient care simulation. The scenario asked the nurse to care for a patient in both airborne and contact isolation precautions with small high definition cameras mounted in a real hospital room. The patient was simulated by a live actor with an artificial intravenous line. The simulation scenario asked the nurse to assess their patient and give them some pain medication. The simulation experience was followed by a Think Aloud session while participants watched their individual simulation performance. The session was audio recorded and then transcribed for qualitative analysis. In this facility computers are taken into the patient rooms on carts to support patient care processes like medication administration and clinical charting. It is expected that these carts be used to care for patients in isolation rooms. Nurses are responsible for wiping computer equipment down before and after use with antimicrobial wipes. Several patterns emerged regarding the use of computers in the care of isolation patients. Both personal safety for the nurse as well as the transmission of infectious diseases from patient to patient became major themes. Nursing behaviors noted in the video recordings and insights from the nurses in the Think Aloud sessions will be shared in this presentation.

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