**Title: Making a Difference with the Green Box (to improve contact with patients in isolation)**

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**Research Hypotheses**

Nursing staff on a medical unit has more direct contact with adult patients in contact isolation using a Green Box than without the Green Box.

The Green Box is defined as an area marked on the floor with duct tape (or similar product) immediately inside the patient room door. The Green Box area will be sized to allow face to face contact with the patient, but outside of direct touch contact. Healthcare providers may enter the Green Box to talk with/assess the patient without donning gowns and gloves.

**Background**

The Centers for Disease Control and Prevention recommend the use of Standard and Contact Precautions for multidrug-resistant organisms (MDRO) to reduce transmission of these organisms. Patients infected or colonized with these organisms are placed in contact isolation. Contact precautions require all persons coming in contact with the patient to gown and glove prior to entering the patient room. The process of gowning and gloving takes time, adds a barrier between staff and patients and adds costs to healthcare. Studies have assessed the unintended impact of isolation on patient mental health, physician’s ability to perform examinations, patient satisfaction, patient safety and time spent in direct patient care. One question is what innovative strategies exist to limit transmission of organism and reduce patient isolation?

Impact of Patient Isolation on Patients

Four studies evaluated the impact of isolation on time providers spent in patient care. In a case-control study, Evans, Shaffer and Hughes (2003) found providers spent less time with patients in isolation versus non-isolated patients. Kirkland and Weinstein (1999) reported providers were two times less likely to enter the rooms of patients in isolation than mean room entry. Saint, Higgins, Nallamothu and Chenoweth (2003) noted a difference between medical residents and attending physician’s examinations of patients in isolation. Medical residents did not demonstrate a difference in contact between isolation vs. non-isolation patients; attending physicians examined patients in isolation less frequently than non-isolation patients.

The patients’ sense of well being is realistically challenged related to disease/injury that has resulted in hospitalization. Combined with isolation and potentially less contact with healthcare providers, the risk for increasing anxiety, possible confusion associated with a decrease in stimuli or other psychological sequelae is present. (Gammon, 1998). The Centers of Disease Control and Prevention (Siegel, Rhinehart, Jackson, & Chiarello, 2007) recommends healthcare providers caring for patient on contact precautions should “Counteract possible adverse effects on patient anxiety, depression, and other mood disturbances; perception of stigma; reduced contact with clinical staff; and increases in preventable adverse events.”

One medical chart review study (Stelfox, Bates & Redelmeier, 2003) reported isolation patients had fewer vital sign recordings, less nursing note narratives and physician notes, had more complaints and were less satisfied with their care. This study found that patients in isolation were as twice as likely to experience supportive care failures such as pressure ulcers, fluid and electrolyte abnormalities and falls (20 vs. 3/1000 days, P<0.001).

Patient Satisfaction

Rees, Davies, Birchall and Price (2000) reported patient satisfaction was associated with good communication with their healthcare providers, regardless of isolation status.

A qualitative study (Barratt, Shaban, Moyle, 2007) completed in New Zealand, found the overall experience of MRSA isolation was viewed as negative. “The central characteristic of their experience, ‘behind barriers’ suggested that for these patients MRSA isolation imposes barriers to the expression of own identity and normal interpersonal relationships, and impacts on the delivery of quality care.” Finding ways to engage these patients and promote active participation including control over some aspects of their care seems indicated.

Staff Satisfaction

Healthcare providers voice complaints about the need to don gown and gloves prior to entering an isolation patient’s room. Poor compliance with contact precautions has been reported. (Afif, Huor, Brassard, & Loo, 2002). In 2004, questionnaires were sent to nurses and physicians as part of a study in a tertiary care center (Khan, Khakoo, & Hobbs, 2006). With a 42% response rate (155 questionnaires were returned), data analysis found that nurses did not perceive any difference (74%) in their care of patient in isolation than non isolated patients when compared to physicians (57%). In the physician group, 54% agreed with the statement “Contact isolation patients do not get adequate attention from healthcare workers”. Fifty percent of the physicians perceived isolation patients as “consuming too much time” compared to 14% of the nurses responding. As the total number of contact isolation patients on a caseload increased, more respondents noted an “inability to efficiently respond to the needs of contact isolation patients”.

Research

Morgan, Diekema, Sepkowitz & Perenevich (2008) completed a systematic review and “found that reports of adverse outcomes associated with contact precautions are dispersed over many specialty journals and generally are methodologically weak.” They recommend further studies, as well as improving education of patients and staff related to isolation and monitoring patients for potential adverse events.

A second systematic review by Abad, Fearday and Safdar (2010) found that “contact isolation may negatively impact several dimensions of patient care”, including time spent in direct care, psychological negative effects including depression and anxiety, and patient safety. As stated by Morgan, et.al. (2008) patient education was identified as step to reduce potential adverse psychological effects of isolation.

**Methods**

A quasi-experimental quantitative research study will investigate the frequency and amount of time nursing associates are in direct contact with patients. The independent variable is categorical and is the Contact Isolated vs. Non-contact isolated patient. The dependent variable is continuous and is the time spent in direct patient contact. The study will extend the study described at the 2011 APIC Conference. At the 2011 APIC Conference, a study conducted between January 2009 and December 2010 reported,

A 504-bed Midwestern health system saved up to 2,700 hours and $110,000 a year by creating a “Red Box” safe zone, a three-foot square of red duct tape extending from the threshold of the door, to facilitate communication with patients on isolation or “Contact Precautions”. Conducted by the infection prevention team at the Trinity Medical Center in the Quad Cities on the Iowa/Illinois border, the study revealed that by utilizing this safe zone, their hospitals were able to save time, money in unused gowns and gloves, and that the quality and frequency of communication between healthcare professionals (HCP) and isolated patients increased. (Franck, Behan, Herath, Mueller & Marhoefer, 2011)

Nursing Associate contact with patients in their rooms is tracked through a Tracker system already in place. This technology will support data collection of nursing staff time (minutes inside the patient room) pre and post intervention. Tracker data will not include individual staff names; the report will show frequency and minutes of contact with selected patients.

One medical unit will be selected for this research study. A seven day period will be identified for pre-intervention data collection. Using the tracker system, nursing time in minutes spent inside a patient room and frequency of nurse/CNA patient contact will be collected on all patients in contact isolation. The same amount and frequency data will be collected on an equal number of patients who do not have contact isolation. These patients will be randomly selected.

In collaboration with infection prevention, respiratory therapy, and environmental services, the nursing associates on one medical floor will implement an adapted “Green Box” intervention as discussed at APIC 2011. The name “Red Box” has been changed to Green Box since the study hospital uses the term Red Box for a different process. The adaptation will be the size of the marked Green Box will be determined based on room shape and size. The size will allow face to face contact between nursing and patient but will not support direct contact. Nurses will be educated on the process and observations of compliance with reeducation will occur at every shift change during the first two weeks of implementation.

A seven day period between 4-6 weeks post intervention will be identified for data collection. The data collection process will follow the same steps as pre-intervention data collection.

**Analysis of Data**

Using Minitab 16.0 an analysis of covariance (ANCOVA) will be run using pre-test post-test means.

**Human Rights Protection**

The unit nursing staff will be informed by their clinical manager and the primary investigator of a research study focusing on nursing workflow including contact with patients. The nursing staff will be informed that workflow reports/tracker data will not be specific to individual staff, but inclusive of all nursing staff on the unit. There is no risk to the patient or to the nursing staff on the unit. Identifiable individual data will not be collected. Patients will be assigned a number. Data collected will be maintained in a locked office.

**Implications**

Recognizing the benefit and necessity of isolation and contact precautions, this study hopes to identify an intervention to improve frequency and amount of time patients in isolation experience with their healthcare provider, while minimizing risk of infection transmission. Time with healthcare providers may be especially important to patients, who are elderly, have dementia or delirium, or comorbid psychiatric disorders. An increase in contact can support reality testing, assessments, patient teaching and reduce anxiety or depressive symptoms.

Identifying and implementing strategies that promote direct patient care with patients in isolation has the potential to improve quality of care, patient satisfaction, patient safety and reduce healthcare costs. In addition, staff compliance with consistent, appropriate use of PPE may increase when staff is provided alternative time saving strategies to assess patients safely while maintaining infection control practices.

**References**

[Abad C](http://www.ncbi.nlm.nih.gov/pubmed?term=%22Abad%20C%22%5BAuthor%5D), [Fearday A](http://www.ncbi.nlm.nih.gov/pubmed?term=%22Fearday%20A%22%5BAuthor%5D), [Safdar N](http://www.ncbi.nlm.nih.gov/pubmed?term=%22Safdar%20N%22%5BAuthor%5D). (2010). Adverse effects of isolation in hospitalized patients: a systematic review. [*J Hosp Infect.*](http://www.ncbi.nlm.nih.gov/pubmed/20619929), 76(2):97-102.

Afif, W., Huor, P., Brassard, P., & Loo, V.G. (2002). Compliance with methicillin-resistant Staphylococcus aureus precautions in a teaching hospital. *Am J Infect Control*, 30(7), 430-433.

Barratt, R., Shaban, R., & Moyle, W. (2007) Behind barriers: patient’s perceptions of source isolation for Methicillin-resistant Staphylococcus aureus (MRSA). *Aust J Adv Nurs,* 28( 2), 53-59.

Evans HL, Shaffer MM, Hughes MG, Smith RL, Chong TW. (2003). Contact isolation in surgical patients: a barrier to care? *Surgery,* 134(2), 180–188.

Franck, J.N., Behan, A.Z., Herath,P.S., Mueller, A.C., & Marhoefer, K.A. The red box strategy: an innovative method to improve isolation precaution compliance and reduce costs. *Am J Infect Control,* 39(5), E208.

Gammon, J. (1999). The psychological consequences of source isolation: a review of the literature.  *Journal of Clinical Nursing Practice*, 8(1), 13-21.

Khan FA, Khakoo RA, Hobbs GR. (2006). Impact of contact isolation on health care workers at a tertiary care center. *Am J Infect Control*, 34, 408-413.

Kirkland, K.B., & Weinstein, J.M. (1999). Adverse effects of contact isolation*. Lancet* 354(9185): 1177–1178.

Morgan,D.J., Diekema, D.J., Sepkowitz, K., & Perencevich, E.N. (2009). Adverse outcomes associated with contact precautions: a review of the literature. *Am J Infect Control* 37(2), 85–93.

Rees, J., Daies, H.R., Birchall, C and Price, J. (2000). Psychological effects of source isolation nursing (2): Patient satisfaction. *Nursing Standard*, 14 (29), 32-26.

Saint,S., Higgins, L.A., Nallamothu, B.K., & Chenoweth, C. (2003) Do physicians examine patients in contact isolation less frequently? A brief report. *Am J Infect Control,* 31(6), 354–356.

Siegel, J.D., Rhinehart, E., Jackson, M., Chiarello, L. and the Healthare Infection Control Practices Advisory Committee. (2007). Guideline for isolation precautions: preventing transmission of infectious agents in healthcare settings, June 2007.

Stelfox ,H.T., Bates, D.W.,& Redelmeier, D.A. (2003). Safety of patients isolated for infection control. *JAMA* 290(14), 1899–1905.

Yin,S. (2011). *Duct Tape Cuts Time and Costs Related to Contact Precautions*. Retrieved August 25, 2011, from. http://www.medscape.com/viewarticle/745502