

Supporting Nursing Research in a Community Hospital: The Red Box Study

Melissa Pollard, DNP, RN-BC, ARNP-BC

Kathleen Wickens, BSN, RN, CCRN

Exeter Hospital

July, 2014

Conflict of Interest

- There is no commercial support or sponsorship
- The presenter has no conflict of interest

Red Box Strategy

for Contact Precautions



Kathleen Wickens, RN, BSN, CCRN

Exeter Hospital

November, 2013

Personal Protective Equipment

Contact Precautions

Perform before entering room

- Hand Hygiene- in and out



- Gloves

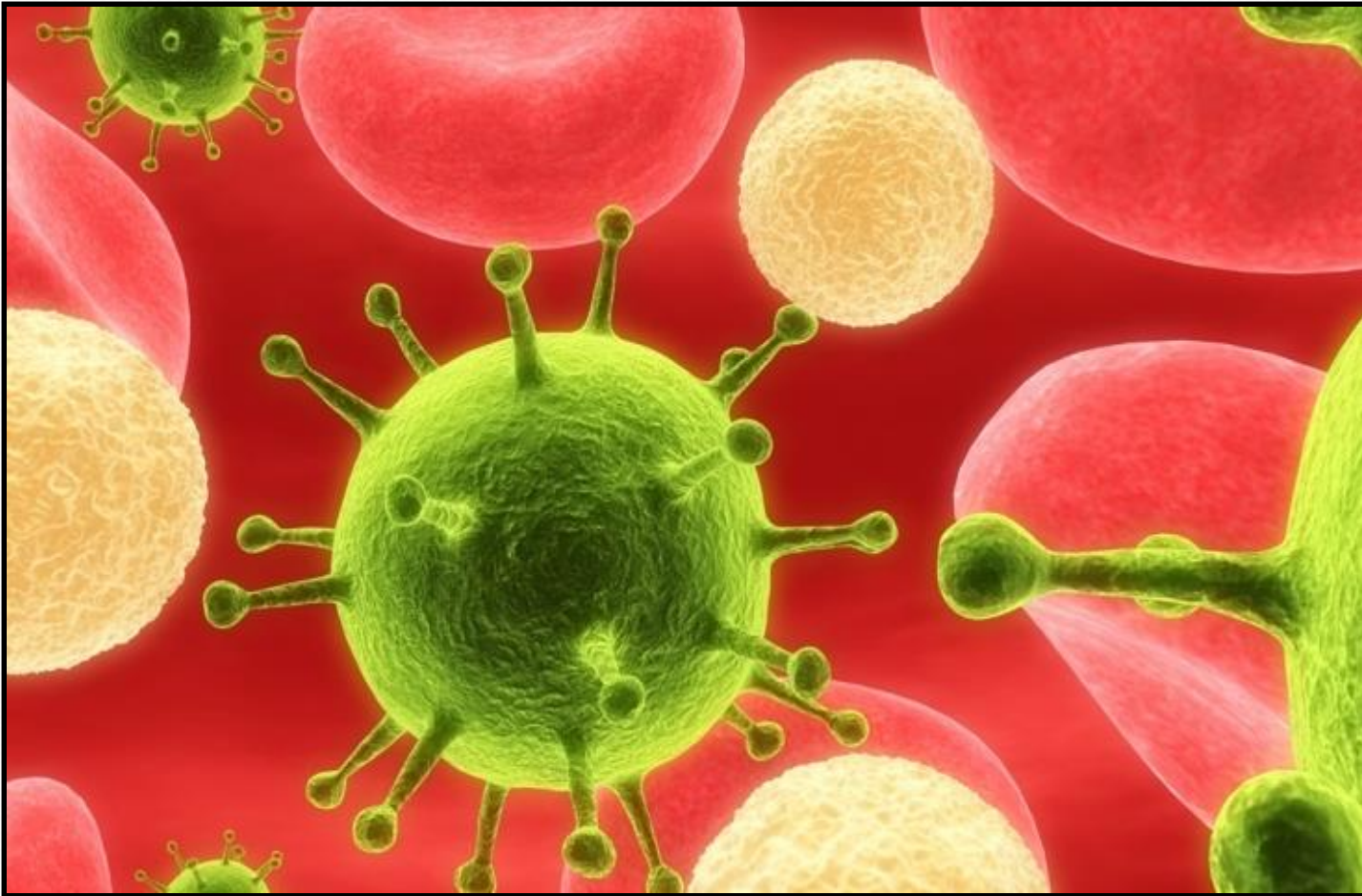


- Gown – tied at neck and waist



Purpose of PPE

Protect our Patients and Caregivers from Infections



Research Problem

- Although instituted to prevent healthcare associated infections (HAIs), contact isolation takes a significant amount of time, causing delays that produce patient anxiety, frustration and dissatisfaction with care (5,11).

Research Problem

Abad, Fearday, and Safdar (2010) in the Journal of Hospital Infection stated,

"...We found 16 studies that reported data regarding the impact of **isolation** on patient mental well-being, patient satisfaction, patient safety or time spent by healthcare workers in direct patient care. The majority showed a negative impact on patient mental well-being and behaviour, including higher scores for depression, anxiety and anger among isolated patients..." (3)

Research Problem

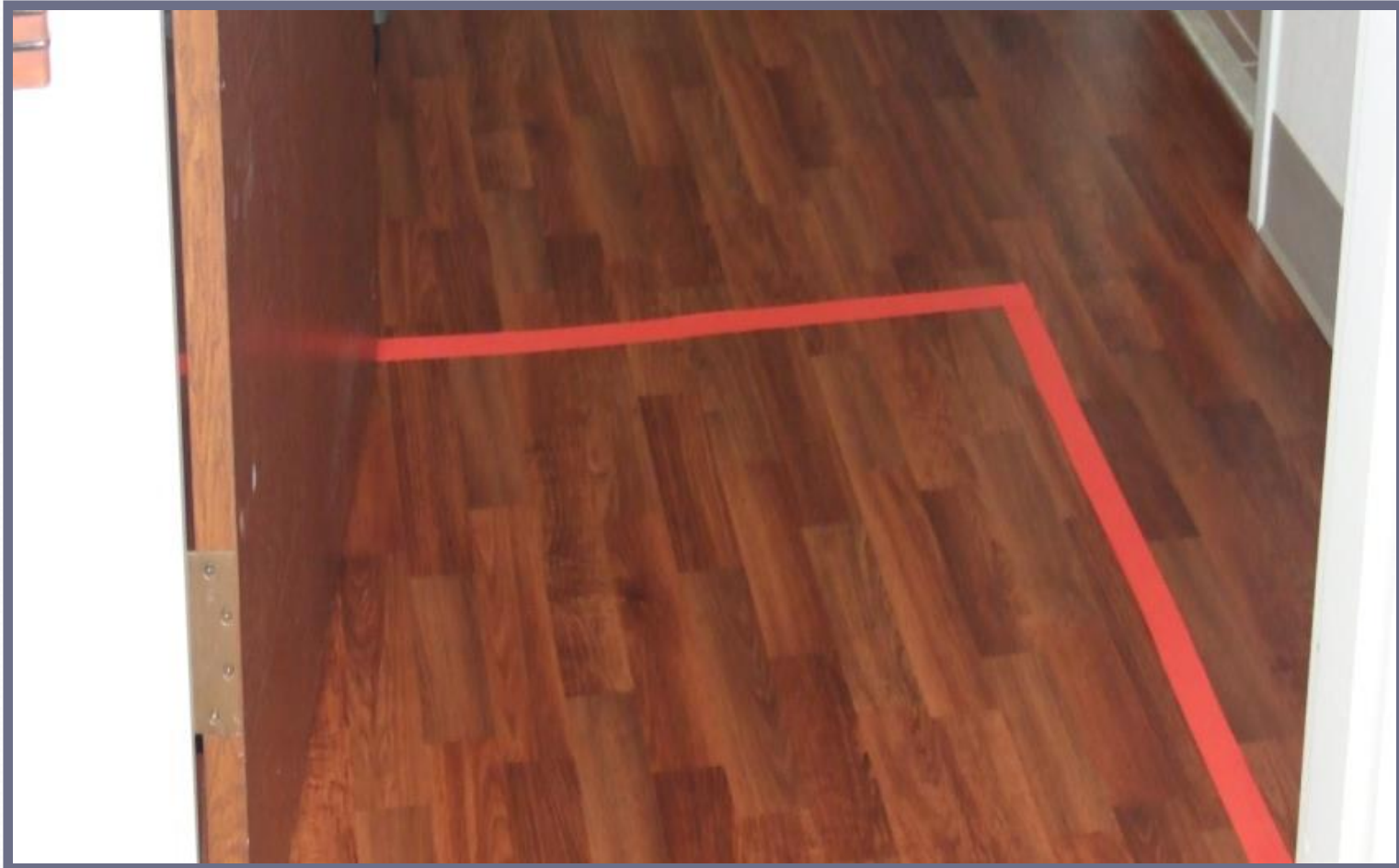
- Research shows that contact precautions decrease the quality and frequency of interaction provided by caregivers (4,6,7).
- There is a decrease in compliance with contact precaution policy (4,6,7).
- There is a significant cost associated with the use of PPE (5).

Background

- Between 2009-2010, Trinity Regional, a MAGNET hospital in Illinois tested “The Red Box Strategy” by creating a “Safe Zone” at the threshold of the doorway into contact precaution rooms by placing red tape on the floor in a 3 foot x 3 foot box.
- The designated “Safe Zone” allowed staff to enter a contact precaution room without donning PPE.
- Staff were allowed to enter the patient contact precaution room without PPE as long as they did not cross the red line, and did not touch anything in the room while in this space.

Background

Trinity's Red Box



Research Purpose

- To evaluate the affects of “The Red Box Strategy” on patient and healthcare giver satisfaction with the contact precaution process.
- To measure the affect of “The Red Box Strategy” on healthcare giver compliance with personal protective equipment (PPE).
- To measure if there was a reduction in cost in PPE with the use of “The Red Box Strategy”.

Research Questions

- Does “The Red Box Strategy” increase patient satisfaction with the contact precaution process?
- Does “The Red Box Strategy” increase healthcare givers satisfaction with the contact precaution process?
- Does “The Red Box Strategy” increase healthcare givers compliance with personal protective equipment?
- Does “The Red Box Strategy” reduce the cost of PPE?

Research Methods

Study Design and Setting

- Design: Qualitative and Quantitative Study
- Setting: One North East Community
Acute Care Hospital - 100 bed

Research Methods

Study Sample

- Surveys

- Inclusion Criteria

- Consenting patients in the ICU on contact precautions.
 - If the patient was unable to consent or participate due to impaired cognition or severity of illness, the patient's legal representative was interviewed.
 - Consenting Healthcare givers who gave care to patients on contact precautions in the ICU.

- Exclusion Criteria

- Patients that were on other precautions in addition to contact precautions, for example droplet, enteric, or airborne.

Research Methods

Study Sample

- PPE Compliance Observations
 - All caregivers entering contact precaution rooms.

Research Methods

- Sample Size:
 - Satisfaction Surveys
 - Patients = 30
 - Healthcare givers = 35
 - PPE observations
 - Total observations = 904
 - Contact precautions alone (pre-Red Box) = 177
 - Contact precautions with Red Box = 255
 - Strategy Staying Power = 472

Survey and Data Instruments

- Likert Survey was performed for patient and healthcare giver satisfaction of contact precautions before and after instituting “The Red Box Strategy”.
 - Questions related to communication and satisfaction
 - 5 point Likert Scale
- Data collection was performed on personal protective equipment compliance of 4 different healthcare giver types on hand hygiene, gowns, and gloves before and after instituting “The Red Box Strategy”.

Study Variables

- **Patient Perceptions of Contact Precautions**
- **Healthcare Giver Perceptions of Contact Precautions**
- **PPE**
 - Hand Hygiene In
 - Hand Hygiene Out
 - Gown on and tied correctly
 - Gloves worn
- **Different Healthcare Giver Types**
 - RN
 - LNA
 - RT
 - MD (Provider)

Procedure

- **Timeframes for Survey Distribution (12 Weeks)**
From May to Oct 2013
- **Recruitment / Survey Announcements**
 - At Unit Based Practice Council (UBPC) meetings, ICU staff meetings, email broadcasts, and Daily Dashboard
 - Postings
- **Distribution of Survey**
 - UBPC and ICU meetings
 - Hospital's ICU
 - Cover letter, Informed consent, questionnaire
- **Collection of Survey**
 - Collection envelopes designated areas in ICU, collected daily

Procedure

- **Plan Introduction of Strategy/ PPE Observations**
 - (12 Weeks) From May to Oct 2013
- **Staff Education**
 - At Unit Based Practice Council (UBPC) meetings, ICU staff meetings, email broadcasts, and Postings at Daily Dashboard
 - Department Point People
- **Collaboration with Engineering**
 - Measuring and designing templates and procedure book for each room
 - Choosing a product (tape)
 - Educating engineering staff
 - Designing Work Order Procedure

Procedure

- Template
- Tape
- Work order process
- Educating staff



Procedure

- **Recruitment and Training of Observers**
 - At Unit Based Practice Council (UBPC) meetings, ICU staff meetings, email broadcasts, and Postings at Daily Dashboard
- **Data Collection/Observations of PPE usage**

Procedure

- **Data Management**
 - Data Coding - Surveys and PPE observations
 - Data Cleaning - Completed Surveys and Observation Data checked for completeness
 - Data Entry – Data entered upon receipt, backup files

Procedure

- **Protection of Human Subjects**
 - Approval from Hospital's:
Nursing Research Council
Infection Prevention Department
IRB
Informed Consent and Cover Letter
confidentiality assured
 - No known risks and inconveniences
 - Consent to participate in the study was implied by the participants completion of the survey instrument
 - Records maintained secure and confidential
 - Password protected

Data Analysis

- **Descriptive Statistics** -Background data
 - Frequency, percentages
- **Chi Square Test**
- **Mann Whitney**
- **T test** for the difference of means of two independent samples
 - Comparison between healthcare giver scores before and after implementing strategy
 - Comparison between patient scores before and after implementing strategy

Study Results

- **Demographics (see table)**

PPE Compliance

- The number of different healthcare giver types before and after implementing the strategy:
 - RN (110/110) RT (15/44)
 - LNA (33/71) MD (19/33)

Survey

- The number of patients and healthcare givers before and after implementing the strategy:
 - Patients (30/30)
 - Healthcare givers (35/35).

Study Results

- **PPE Compliance**

- A statistically significant relationship was found for all aspects of PPE measured for compliance when “The Red Box Strategy” was used for contact precautions by RN’s, LNA’s, and RT’s.
- A statistically significant relationship was found for hand hygiene compliance upon entering a room for MD/Providers.
- No statistically significant relationship was found for hand hygiene out, gown on and tied and gloves worn for MD type.
- For all healthcare giver types hand hygiene compliance for entering a room increased 32%, hand hygiene compliance when exiting a room increased 11%, gowns on and tied increased 16%, and gloves worn increased 4%.

Study Results

- **Surveys**

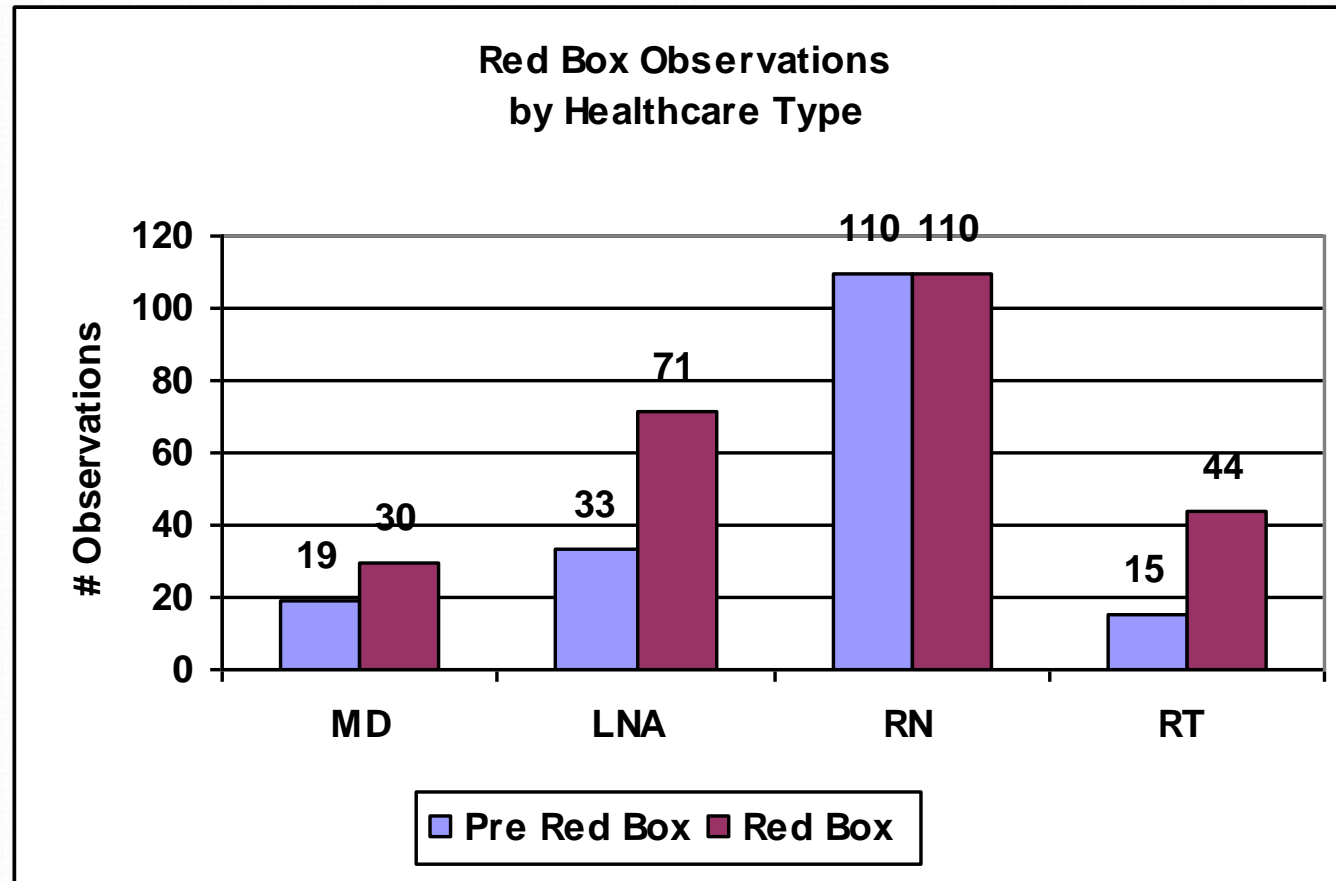
- **Patient and Healthcare Giver**

A statistically significant relationship was found between pre and post implementation survey responses. Patient and healthcare giver satisfaction increased for contact precautions after “ The Red Box Strategy was implemented.

Study Results

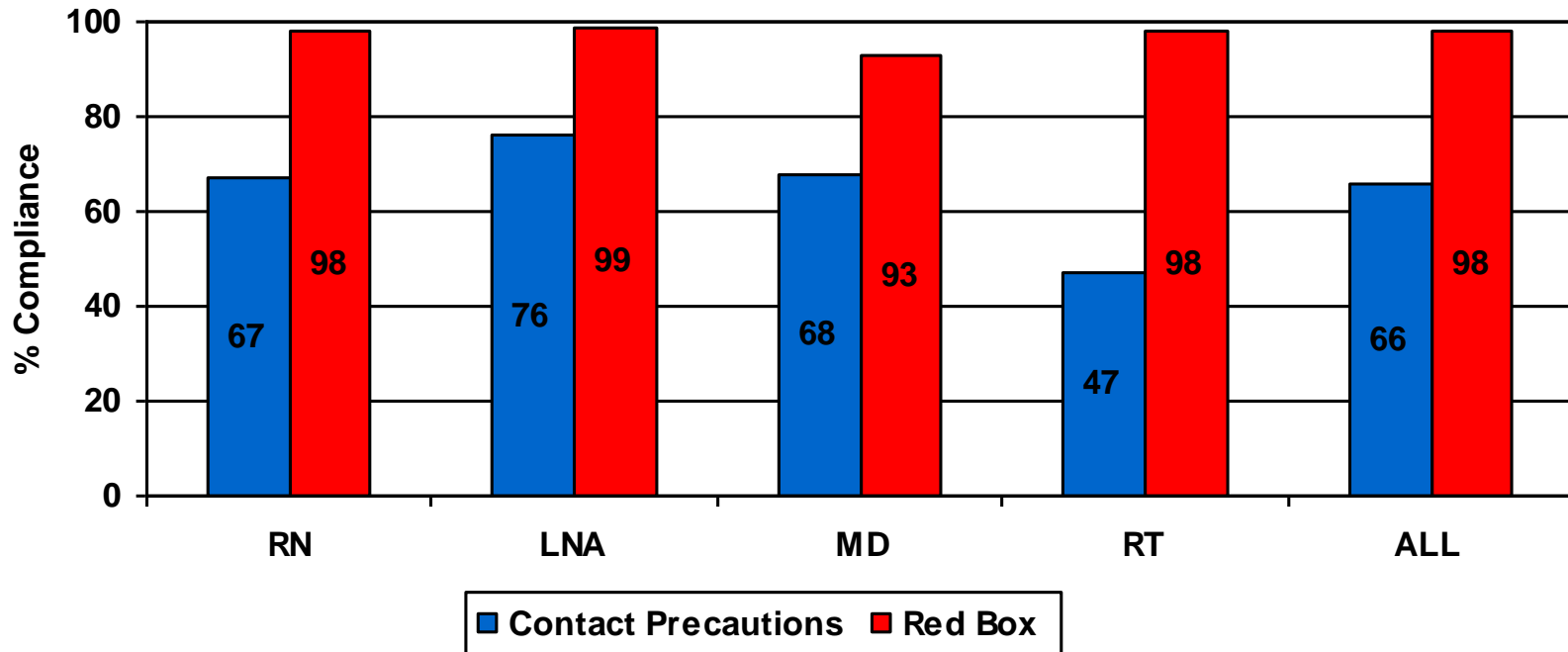
- The cost savings of PPE could not be determined due to:
 - Unaccounted use of PPE by Visitors.
 - Unaccounted use of PPE by Clergy.
 - The data collection tool was not sufficiently designed to account for separate usage of Red Box with and without using contact precautions.

Red Box - Demographics

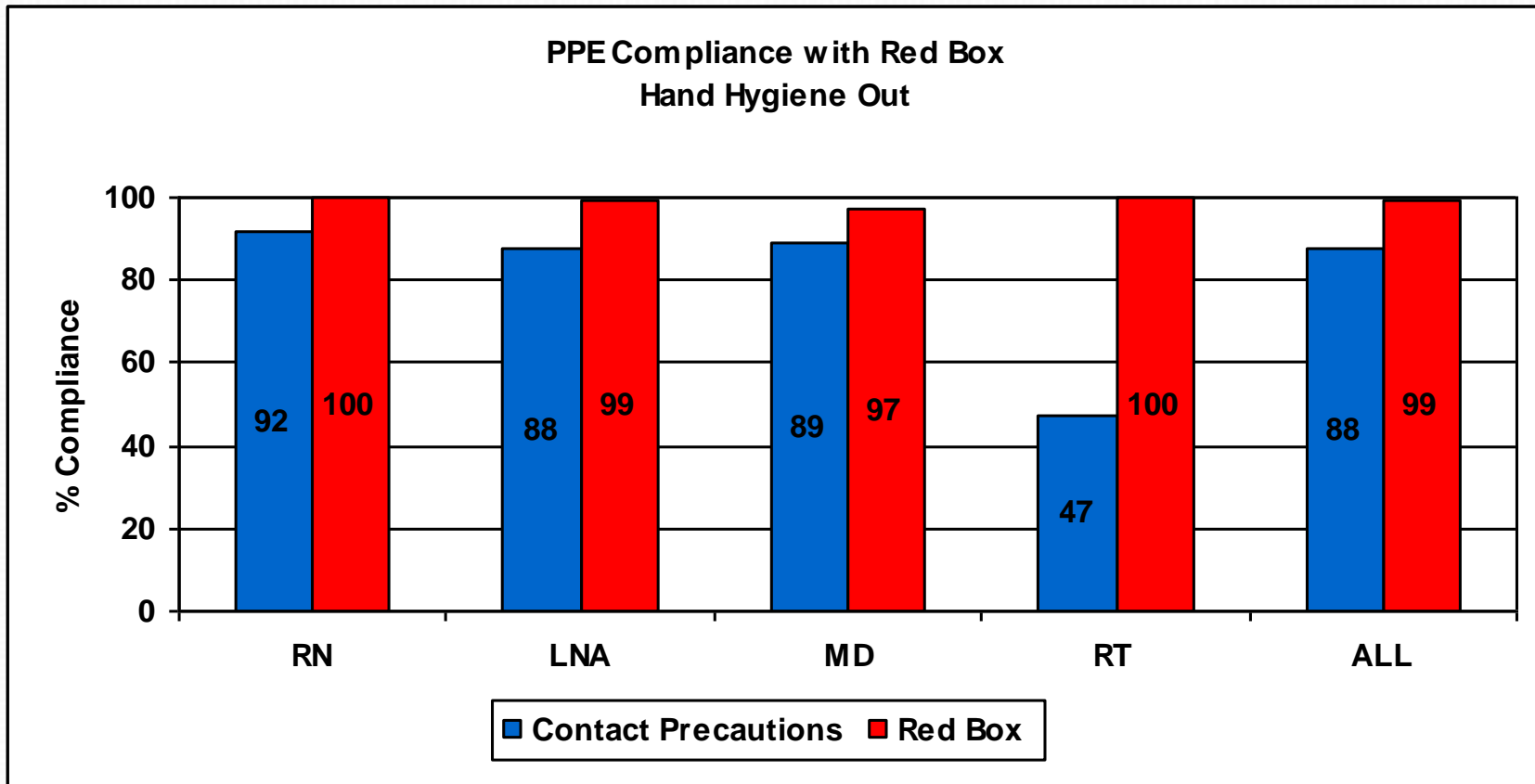


PPE Compliance with Red Box

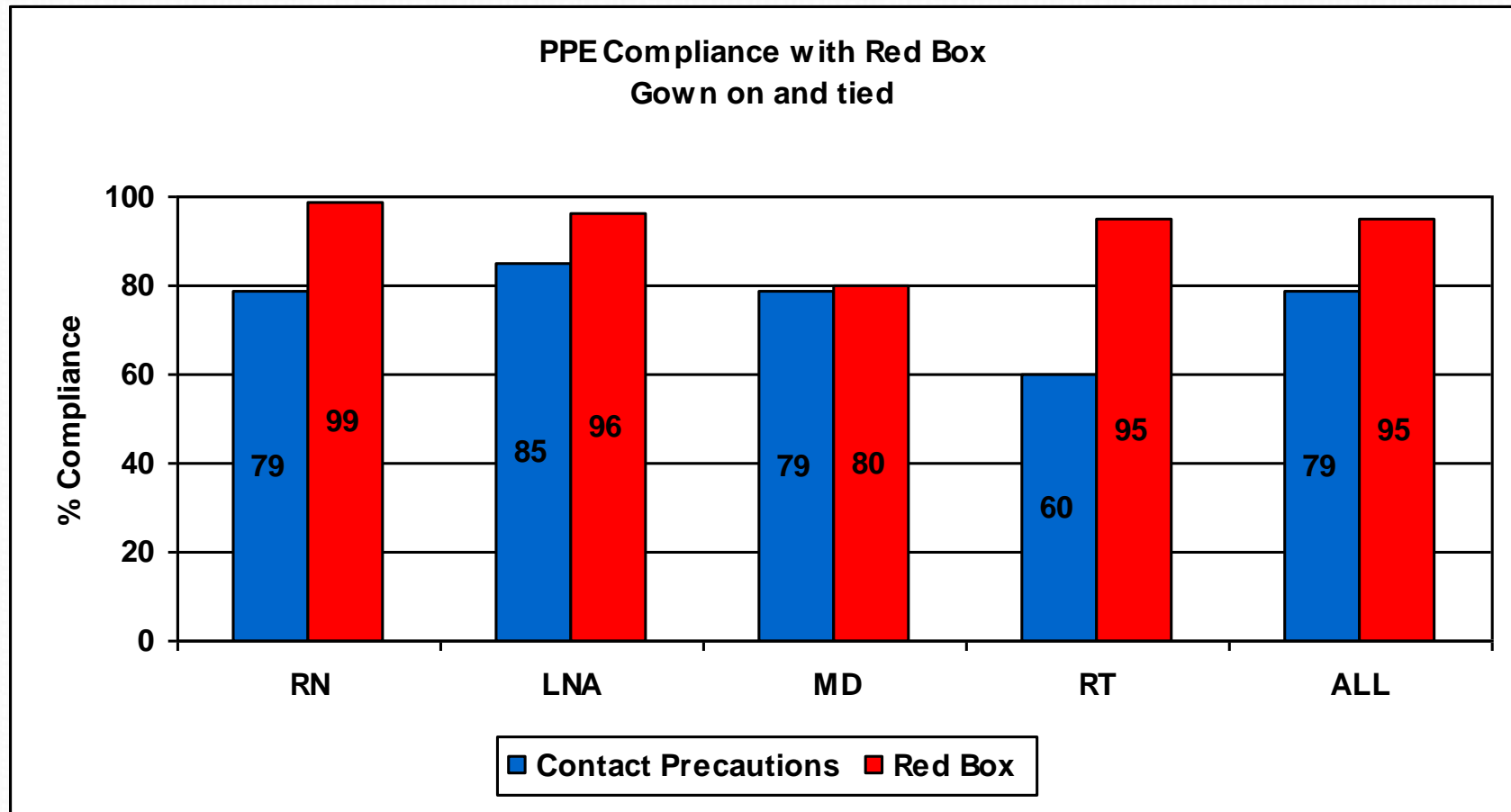
PPE Compliance with Red Box
Hand Hygiene In



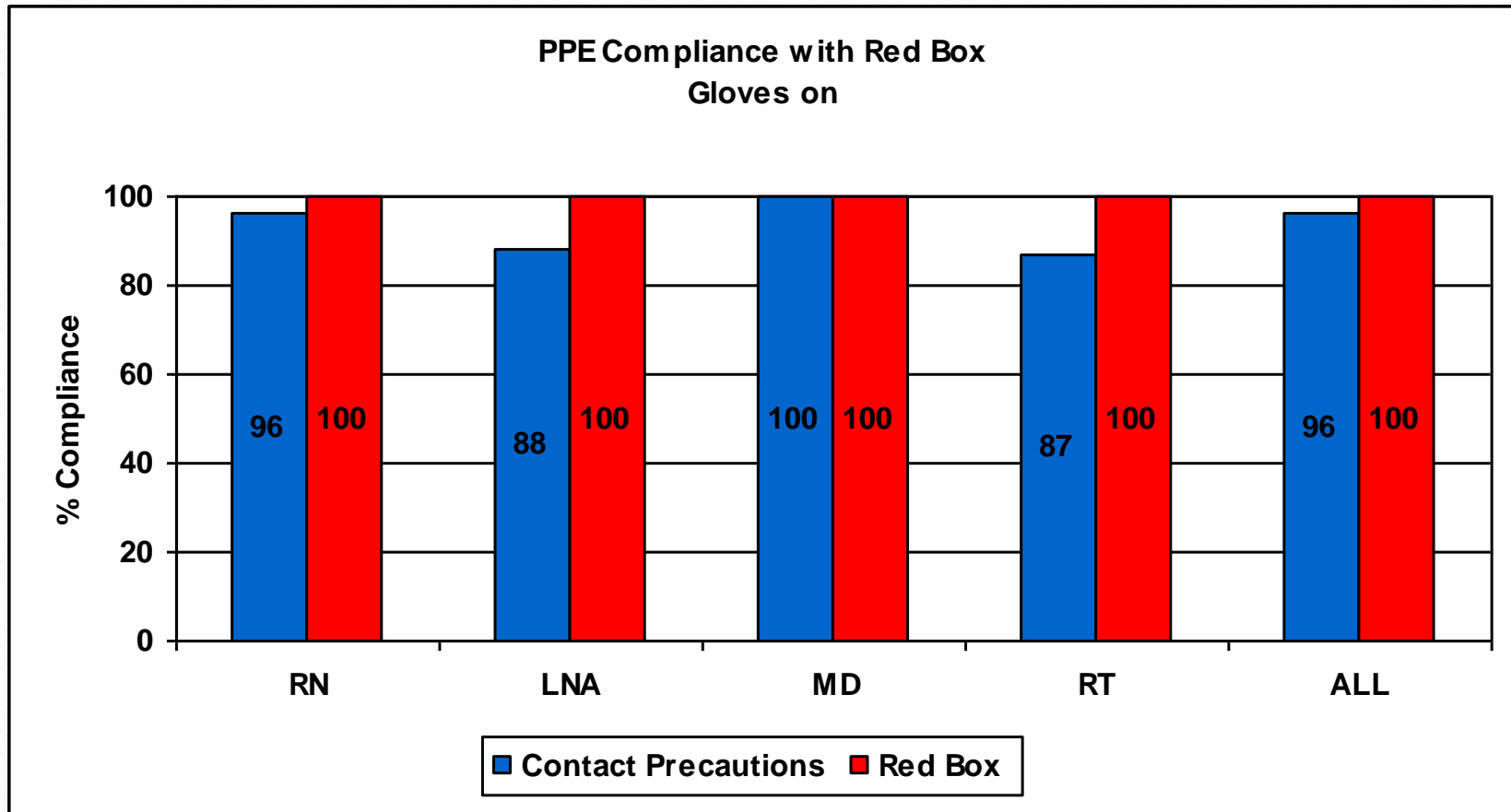
PPE Compliance with Red Box



PPE Compliance with Red Box

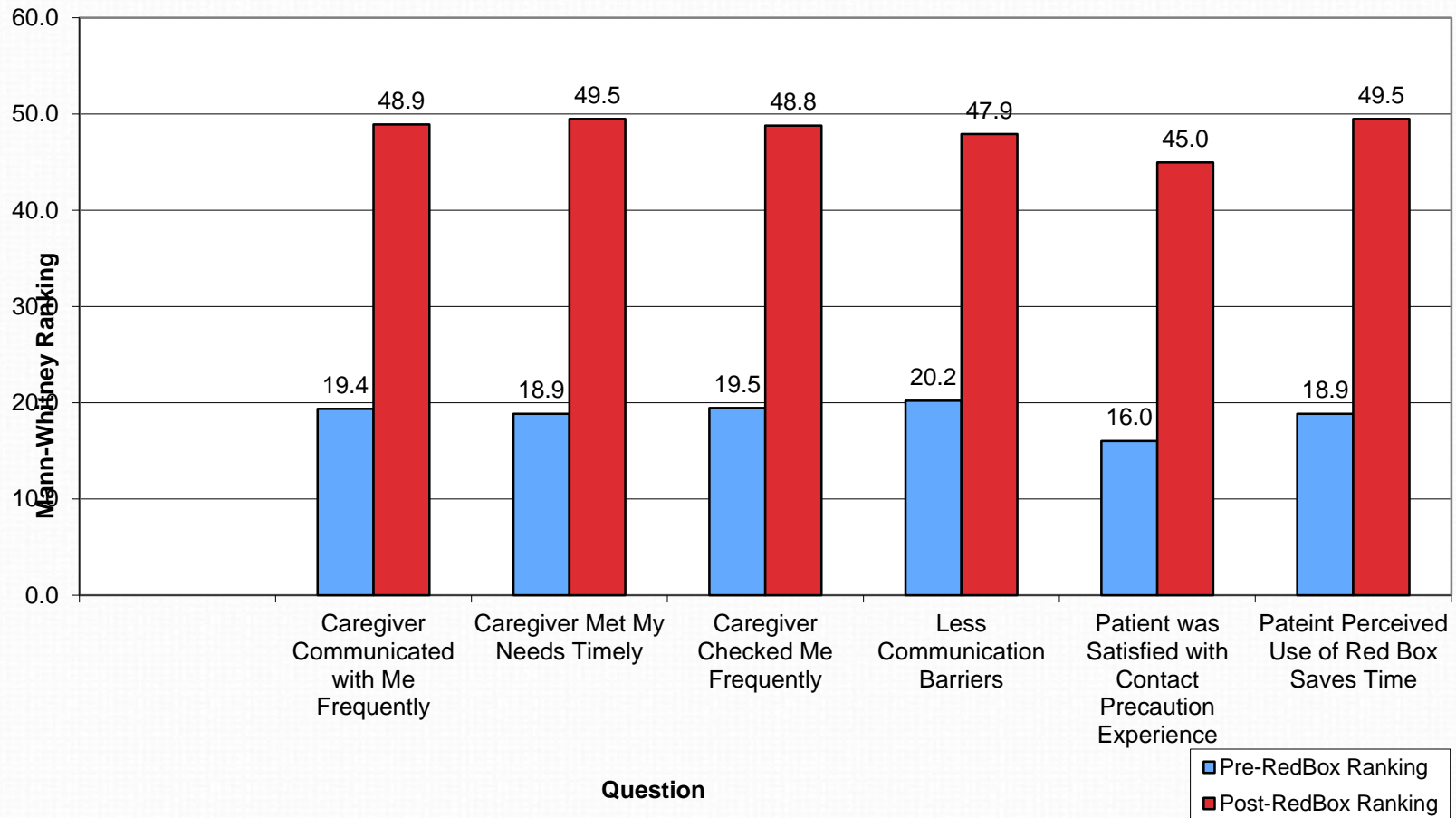


PPE Compliance with Red Box

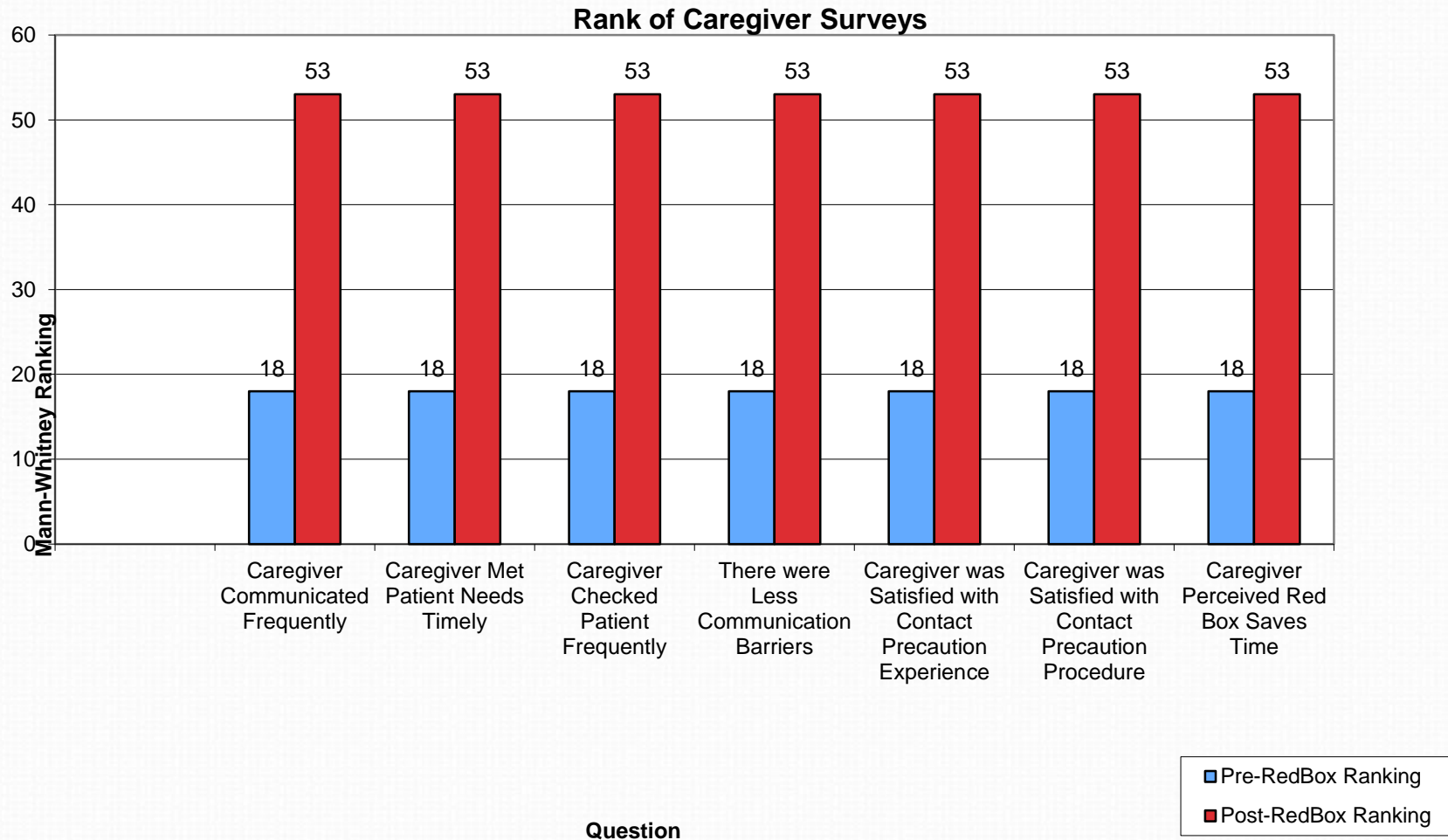


Patient Survey

Rank of Patient Surveys



Healthcare Giver Survey



Conclusions

- Using “The Red Box Strategy” increased patient and caregiver satisfaction with the contact precaution process.
- The strategy increases compliance for many aspects of PPE for most caregiver types. The exceptions to this were no relationship was found between the strategy and MD compliance with hand hygiene upon room exit, gown and gloves worn.
- “The Red Box Strategy” staying power demonstrated consistency with the trial’s findings, with compliance rates holding at 6 months post implementation.

Conclusions

- Teaching about the strategy and the importance of PPE compliance raises awareness of it's importance.
- The visual cue of the “Red Box” in addition to signage helps to reinforce awareness and procedure compliance.

Conclusions

- Reasons for an increase in patient satisfaction
 - **Patients perceived:**
 - Their needs were met in a more timely manner.
 - An increase in frequency of interaction between themselves and their caregivers.
 - They were being checked on more frequently.
 - Less of a barrier with communication with their caregivers.
 - That it took less time for caregivers to respond to their needs when they didn't always have to gown.

Conclusions

- Reasons for an increase in healthcare giver satisfaction
 - **Caregivers perceived:**
 - An decrease in barriers to communication.
 - Caregivers perceived saving time.
 - Meeting the needs of their patients in a more timely manner because of the reduction in the need to gown.
 - An increased ability to communicate with their patients.

Discussion

Communication:

- The organization's leadership team has identified communication as one of its top priorities in its pursuit of clinical excellence, quality care and patient safety.
 - This priority, which influences the culture of the organization, may have had an affect on the study results.

Discussion

Commitment to Relationships:

- The study hospital has committed to establishing and maintaining an environment that promotes nurturing relationships between its patients, their families and the caregivers of the organization.
 - This commitment, which also affects the culture of the organization, may have also influenced the results of the study.

Study Limitations

- **Observation Tool**

- Not designed to account for visitor/clergy use of The Red Box.

- **Strategy Influences PPE Usage/Cost**

- Increasing PPE compliance, increases PPE used.
- Using the Red Box, decreases PPE used.

- **Other Isolation**

- Healthcare givers and visitors are required to gown for patients on isolation for enteric precautions, as well as contact, and this can affect the cost of PPE.

Study Limitations

- **Sampling Method**

- Convenience sample may not be entirely representative of the population and makes it difficult to make generalizations.

- **Survey Time**

- Consider high number of surveys distributed at same time.

- **Participants**

- May have elected to participate in the study based upon their attitudes towards contact precautions.
- May have been aware they were being observed.

- **Researcher's Association**

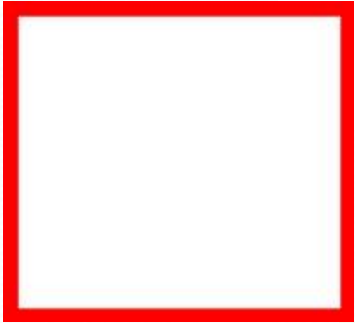
- Being a member of the ICU team may have positively or negatively influenced the study participants.

Future Research

- **Consider measuring the affects of “The Red Box Strategy” on:**
 - Patient safety
 - Reduction of delirium or depression
 - Potential time and cost savings
 - Visitor satisfaction
 - Value for use with other isolation

Questions / Comments

mpollard@ehr.org
kwickens@ehr.org



References

- 1. Franck JN, Behan AZ, Herath PS, Mueller AC, Marhoefer KA. The Red Box Strategy: An Innovative Method to Improve Isolation Precaution Compliance and Reduce Costs. *Am J Inf Cont* 2011; June: E208.
- 2. Centers for Disease Control and Prevention. NHSN. Overview of the Patient Safety Component, Device-associated module (CLABSI, VAP, CAUTI). <http://www.cdc.gov/nhsn/wcOverviewNHSN.html>. 2010.
- 3. Abad C, Fearday A, Safdar N. Adverse Effects of Isolation in Hospitalized Patients: A Systematic Review. *J Hosp Inf* 2010; 76: 97-102.
- 4. Zastro RL. The Contact Precautions Controversy: Automatic Assignment of Contact Precautions May Do More Harm Than Good. *Am J Nursing* Mar, 2011 Vol 111, No. 3 47-53.
- 5. Kirkland KB, Weinstein JM. Adverse Effects of Contact Isolation. *Lancet* Oct, 1999; 354 (9185):1177-8.
- 6. Evans HL, et al. Contact Isolation in Surgical Patients: A Barrier to Care? *Surgery* 2003; 134(2): 180-188.
- 7. Saint S, et al. Do Physicians Examine Patients in Contact Isolation Less Frequently? A Brief Report. *Am J Inf Cont* 2003; 31(6): 354-356.
- 8. Morgan DJ, Day HR, Harris AD, Furuno JP, Perencevich EN. The Impact of Contact Isolation on the Quality of Inpatient Hospital Care. *Plos One* July, 2011 Vol 6, Issue 7,1-7.
- 9. Morgan DJ, Pineles L, Shardell M, Graham MM, et al. The Effect of Contact Precautions on Healthcare Worker Activity in Acute Care Hospitals. *Infect Cont Hosp Epi* 2013; 34(1): 69-73.
- 10. Morgan DJ, Diekema DJ, Sepkowitz K, Perencevich EN. Adverse Outcomes Associated with Contact Precautions: A Review of the Literature. *Am J Inf Cont* 2009; Mar, 37(2):85-93.
- 11. Gasink LB et al. Contact Isolation For Infection Control in Hospitalized Patients: Is Patient Satisfaction Affected? *Inf Cont Hosp Epidem* 2008; 29(3): 275-278.