Mock Codes in a Radiology Department for Systems Improvement and Staff Competency

■ Sally Rudy, MSN, RN-BC, CHSE; Vicki Rooney, RT(R); and Eileen Westley-Hetrick, MSN, RN

ABSTRACT: This article explores the use of mock codes in a radiology area in a 550-bed teaching hospital to see if they identify inadequacies in systems, standards of care, and teamwork that could be remediated in the interest of optimal patient care. Mock codes were run in different units in the radiology department, two newly opened. A total of 38 multidisciplinary responders participated in the mock codes, some from radiology and others from hospital code teams. Responder arrivals and actions were timed and evaluated for teamwork and standards of care. Systems issues were also identified. Debriefing occurred after each session, and participants were asked to complete a postsession evaluation. Significant systems, standards of care, and teamwork shortfalls were identified related to code paging, wayfinding, access to emergency equipment, team leadership, and cardiopulmonary resuscitation. Participants rated the event as a valuable use of their time. Remedial discussions took place during debriefings, and corrective actions began after the sessions. The mock codes were useful exercises that identified systems issues and allowed staff to reflect on their teamwork and resuscitation skills to determine how they could respond more effectively during future events. Remediation included improvements in paging and wayfinding and the implementation of team training and emergency equipment reviews. Continued evaluation will take place using mock codes. (J Radiol Nurs 2015;34:193-199.)

KEYWORDS: Mock codes; In situ simulation; Radiology mock codes; Team communication; Systems failures; Resuscitation.

Running unannounced mock codes in situ, on real clinical units, is a controversial topic but is growing in acceptance as a sound educational and quality improvement tool (Barbeito, Bonifacio, Holtschneider, Segall, Schroeder, & Mark, 2015). Do the benefits of such training to test systems and evaluate response team activities outweigh the possible negatives, such as expense, time, and diversion from real patient care (Clapper, 2013; Andreatta, Saxton, Thompson, & Annich, 2011)? This article explores the use of a series of planned unannounced in situ mock codes in the expanding radiology department of the 550-bed academic medical center in a mid-Atlantic state in the United States to see if they could help to identify issues in present systems, standards of care, and team communication that could be remediated to optimize patient care and safety.

Many code responses are often inadequate, depending on system integrity, team communication, and responder knowledge and experience (Soar, Edelson, & Perkins, 2011). Responders often describe codes as "scary, intimidating, and overwhelming" (Misko & Molle, 2003, pp. 292), regardless of whether they are nurses, physicians, respiratory therapists, or other members of the code team. Nothing hits home and is relevant to staff quite like a cardiac arrest in a new radiology procedure suite that does not go well. Because staff responses in the first few minutes of a code are critical for patient survival (Nolan, 2011; Traxler & Punnoose, 2012), the code response in this expanding radiology department, where critical events happen often but do not always run smoothly, needed to be evaluated and remediated.

Sally Rudy, MSN, RN-BC, CHSE, Simulation Educator, Penn State Hershey Clinical Simulation Center, Hershey, PA; Vicki Rooney, RT(R), Radiology Assistant Manager, Penn State Hershey Medical Center, Hershey, PA; Eileen Westley-Hetrick, MSN, RN, Clinical Nurse Educator, Department of Nursing Education and Professional Development, Penn State Hershey Medical Center, Hershey, PA

Corresponding author: Sally Rudy, Simulation Educator, Penn State Hershey Clinical Simulation Center, MC H182, 500 University Drive, Hershey, PA 17033. E-mail: srudy@hmc.psu.edu

Mock codes have been run inconsistently throughout the hospital for the past 10 years to identify systems issues, although not in a sequential manner in any one area of the hospital. As a result of the early mock codes, a major improvement occurred in 2007 that standardized the code carts and defibrillators throughout the hospital. As the American Heart Association (AHA) guidelines continue to focus on the importance of effective team communication for successful resuscitation and better simulation tools have allowed for accurate cardiopulmonary resuscitation (CPR) feedback, the ability to look at those parameters became an additional focus during mock codes in the past 5 years. The more mock codes were run, the more obvious it became that patient safety and outcomes might improve with ongoing simulated code response activities that looked at systems issues but that also addressed team communication and individual CPR effectiveness.

Simulated code events with after action debriefing was chosen to evaluate and to address any code response issues in radiology when new areas were constructed, specifically a procedure suite and an inpatient holding area. In addition, mock codes were planned for existing areas in the department. The clinical nurse educator (CNE) for radiology requested the mock codes to allow newly assigned staff to practice responding to critical events and to identify new emergency equipment locations. The mock codes were also a forum with which to notify code team members about the possibility of being called to new, unfamiliar locations. It was hoped that the personal reflection after the hands-on experiences would be the difference between identifying what changes in behavior were needed to provide the best emergency responses and simply repeating previous ineffective actions (Boyd, 1983). Adding the familiarity of the participants' own environments to the hands-on experience by running the simulations in the radiology department would help participants transfer what they learned to future events without the added overload of excessive new stimuli such as they would find in the simulation center (Paas, Renkl, & Sweller, 2003). It was also hoped that using simulation in a safe, nonblaming manner to identify systems and performance issues would promote learning that is retained and reflective (Rudolph, Raemer, & Simon, 2014). The debriefing plan for the mock codes was to avoid highlighting individual incorrect actions but rather to focus on objective CPR feedback, team communication, and effective team leadership to positively impact patient outcomes (Hunziker et al., 2011; Cheng et al., 2015).

Promoting teamwork during codes in any department is a challenge but even more so in a radiology department that encompasses many rooms, many types of imaging and interventions, and many specialized staff. Routine staffing in radiology includes various types of radiologic technologists, licensed practical and registered nurses, and patient care aides. Radiologists, anesthesiologists, and other specialized physicians are also intermittently present according to patient care needs and scheduling. The main radiology department in this busy academic medical center has long been a maze of hallways and rooms, difficult to label and find. Hospital code teams, ad hoc groups of providers that include critical care physicians and nurses, respiratory therapists, anesthesiologists, and others, often got lost trying to find codes in radiology. In addition, the code-call system was not standardized. How to call the code team and what happened when the call was placed were different in various parts of the department and throughout the hospital. Additional logistical issues were present, including inconsistent room labeling that hampered operator paging, difficulty finding the closest emergency equipment, unfamiliar environments, and responders who did not know each other's names or roles. There was also concern for safety restrictions in the magnetic resonance imaging area that could contribute to less than optimal and timely code responses.

The mock codes in radiology were part of a hospital-wide mock code program that was in place to identify systems issues. They evolved into a specific quality improvement program as new areas were added to the radiology department and new managers paid more attention to individual and team resuscitation behaviors, probably because of increased simulation center efforts and tools that could evaluate them more easily and consistently. The mock codes were not part of a research study.

METHODS

A series of identical mock codes was started in 2013 to identify systems issues and staff competency in responding to code events in the ground floor radiology department of the 550-bed Level 1 academic medical center. Each mock was unannounced and took place in a different part of the department. A Laerdal Resusci Anne® QCPR® manikin was used with the SimPad® SkillReporter™. This manikin provided objective CPR data that could be shared with staff during the debriefing. The simulated patient was placed in an empty bed and was set to coarse ventricular fibrillation. Staff members were instructed to respond to the simulated patient and to call a real code after finding the simulated patient in cardiac arrest. All responses, arrivals of responders, and resuscitative interventions were recorded chronologically by the unit CNE, who was