THE USE OF SIMULATION TRAINING IN A LARGE MULTI-HOSPITAL HEALTH SYSTEM TO INCREASE PATIENT SAFETY

Thomas Dongilli, Michael DeVita, John Schaefer, Wendy Grbach, Melinda Fiedor, Ake Grenvick, John Lutz
Winter Institute for Simulation Education and Research (WISER)

ABSTRACT

Introduction: Traditional simulation training has focused on preventing errors made by individuals and teams. Many errors in medicine, however, can be traced instead to hospital systems. Patient simulators can be used to recreate crises in a variety of clinical and non-clinical real life settings. We assessed medical response to patient crisis within an integrated health system. We also describe our novel use of automated data collection to identify system deficiencies.

Methods: We ran “mock” codes (MC) using patient simulators in clinical and non-clinical settings. Preprogramming the scenario allowed the data collection to be automated. The automated scenario was cardiac arrest. Which automatically recorded all of the elements in Logs A and B.

Results: We performed multiple codes over a 6 month period in a variety of settings from hospital cafeterias to patient rooms, to lobbies. We had identified many problems such as: The need for AEDs in many of the non-patient care areas, crush carts that would arrive to codes without oxygen tanks, operator delays in announcing codes and more. Below are portions of two separate event logs A and B that are automatically generated after a simulation scenario. Log A notes a significant delay in operator announcing code, which results in delay in 1st responder arriving. Log B reflects the same areas of concern. Log B is after the system has made changes due to the results of mock codes held after Log A was reported back to the health system.

INTRODUCTION

Traditional simulation training has focused on preventing errors made by individuals and teams. Many errors in medicine, however, can be traced instead to hospital systems. Patient simulators can be used to recreate crises in a variety of clinical and non-clinical real life settings. We assessed medical response to patient crisis within an integrated health system. We also describe our novel use of automated data collection to identify system deficiencies.

METHODS

Setting: The University of Pittsburgh Medical Center. A 22 hospital health system. The mocks were run in a variety of areas including patient care and non patient care areas (lobbies, cafeterias, etc.) Each mock was treated as a real event in each hospital. The code teams, operators, and floor staff were not aware in advance that these events were going to take place. The simulator would be placed in the area chosen by the simulation team. Once the code started, a member of the simulation team would notify a staff member that they had found a person unresponsive. Then each code was treated as a real event.

Simulation: The Laerdal SimMan is a computer based human simulator with human physiology simulation capabilities.

Target Group: The focus of these exercises were to identify weaknesses in the health system and to specifically test each hospital for them. The response teams included all persons that would normally respond to an actual code event.

RESULTS

LOG A:

Time | Event | Type | Status
--- | --- | --- | ---
00:00:00 | Started Scenario | Code Team \(\text{VT, VF/PI}\) | Start
00:00:17 | Comment | This is the start of the scenario | Start
00:00:18 | ABC Action | | Start
00:00:20 | Comment | In progress | Start
00:00:04 | Correct Step | 1st Responding Airway | Start
00:00:32 | ABC Action | | Start
00:00:33 | ABC Action | | Start
00:00:30 | Correct Step | IV Challenged | Start
00:00:40 | ABC Action | | Start
00:00:41 | ABC Action | 1st IV Challenged | Start
00:00:12 | ABC Action | Oral Airway inserted | Start
00:00:53 | Bic | | Start

LOG B:

Time | Event | Type | Status
--- | --- | --- | ---
00:00:00 | Started Scenario | Code Team \(\text{VT, VF/PI}\) | Start
00:00:01 | ABC Action | 1st Code Alert | Start
00:00:14 | Ventilation | | Start
00:00:16 | Correct Step | Code Team \(\text{VT, VF/PI}\) | Start
00:00:36 | Ventilation | | Start
00:00:45 | ABC Action | 1st IV Challenged | Start
00:00:54 | Ventilation | | Start
00:00:55 | Correct Step | 1st IV Challenged | Start
00:00:56 | Correct Step | IV Challenged | Start
00:00:59 | Correct Step | Oral Airway inserted | Start
00:01:03 | Correct Step | 1st IV Challenged | Start

CONCLUSION

Conclusions: The use of patient simulators to probe and improve health system performance is novel. System errors can be identified, corrected and prevented by using patient simulators and mock codes were the data can be collected and analyzed. This technique may allow patient safety officers to generate data demonstrating errors with underlying system process issues prior to “real” events that may cause patient harm.