ABSTRACT

BACKGROUND: Root cause analysis (RCA) of adverse outcomes is utilized widely in high-risk industries such as aviation and employed with increasing frequency in healthcare. RCA is used by some industries for RCA difficult. While the total cost of simulation RCA is slightly greater than traditional RCA, the evidence supporting the improved understanding of root causes of error through simulation supports its use in the effort to improve healthcare safety.

METHODS: SIMULATION-BASED RCA

• Total of four cases chosen for re-creation using simulation - Three external cases of non-technical errors from closed case files of a major malpractice insurance company (The Doctors Company, New York) - One in-house case which had occurred during the study period, involving similar systems errors as those in the external cases

• Case details used to create scripts, props; medical students as “patient”

• Appropriates simulation environment chosen at the Tulane Center for Advanced Medical Simulation and Team Training (Figs. 1, 2)

• Participants or test subjects: residents, attending physicians, nursing staff

• Simulations and de-briefing sessions run 6-7 times, with 6-12 participants; recorded using WebSP® (Lionis Software, Budapest, Hungary)

• Transcripts of recordings produced and analyzed to determine root cause(s)

RESULTS: Each simulation-based RCA required an average of 66.5 ± 44.9 person-hours of labor. Traditional RCA required an estimated 25.75 ± 8.18 person-hours. Labor costs for simulation-based RCA were approximately $6,048 ± 4,011 and approximately $2,336 ± 742 for traditional RCA. A one-time overhead cost of approximately $8,749.93 was calculated.

CONCLUSIONS: Data regarding the true cost of traditional RCA for a hospital is not well defined, making comparison to the cost of simulation-based RCA difficult. While the total cost of simulation RCA is slightly greater than traditional RCA, the evidence supporting the improved understanding of root causes of error through simulation supports its use in the effort to improve healthcare safety.