

College of Nursing

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# Improving Healthcare Outcomes with Simulation-Based Learning: From Local to International Impact

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# Simulation

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- *A technique that creates a situation or environment to allow persons to **experience** a representation of a real event for the purpose of practice, learning, evaluation, testing, or to **gain understanding of systems or human actions.***

Lioce L. (Ed.), Lopreiato J. (Founding Ed.), Downing D., Chang T.P., Robertson J.M., Anderson M., Diaz D.A., and Spain A.E. (Assoc. Eds.) and the Terminology and Concepts Working Group (2020), Healthcare Simulation Dictionary –Second Edition. Rockville, MD: Agency for Healthcare Research and Quality; September 2020. AHRQ Publication No. 20-0019. DOI: <https://doi.org/10.23970/simulationv2>.

# Basic Skills: The Building Blocks

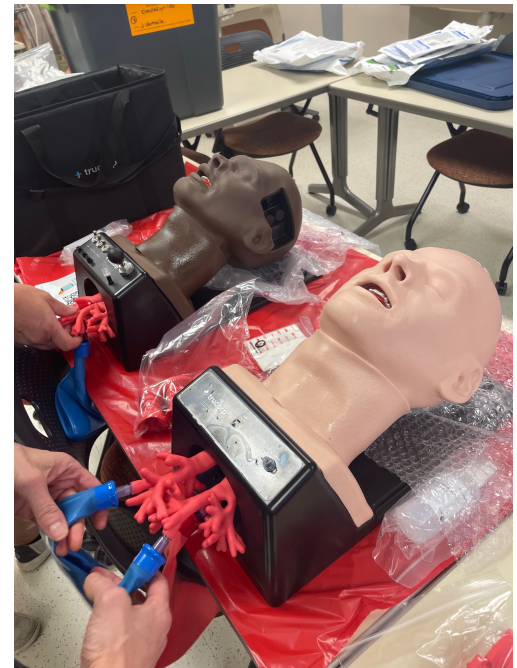
## 1910: Bandaging



## Epidural



## Airway



<https://basicmedicalkey.com/simulation-in-nursing/>

# To Putting it all Together

## Sterile Technique



## Basic Anesthesia Inductions



# UIHC Team Crisis Management Training

## Code Hemorrhage



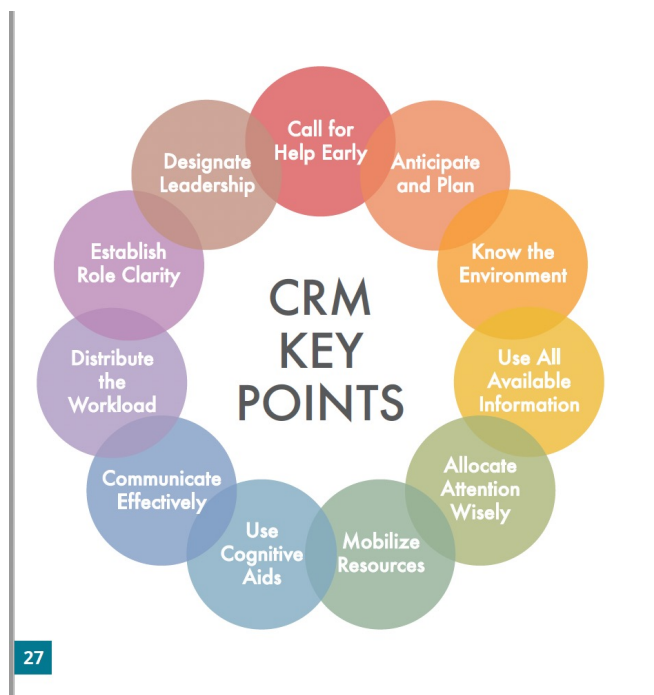
## Operating Room Fire



Team Simulation Design and Debriefing (TSDD) Course

# Changing Culture: Decreasing Human Error

## Crisis Resource Management



27

## Cognitive Aids

**EMERGENCY MANUAL**

Cognitive Aids for Perioperative Crises - V4.4 2022  
Stanford Anesthesia Cognitive Aid Program

<b>ACLS</b>	Asystole / PEA	1
	Bradycardia	2
	SVT - Unstable and Stable	3
	VFIB / VTACH	4
<b>OTHER EVENTS</b>	Anaphylaxis	5
	Bronchospasm	6
	Delayed Emergence	7
	Difficult Airway / Cric	8
	Embolism - Pulmonary	9
	Fire - Airway	10
	Fire - Non-Airway	11
	Hemorrhage	12
	High Airway Pressure	13
	High Spinal	14
	Hypertension	15
	Hypotension	16
	Hypoxemia	17
	Local Anesthetic Toxicity	18
	Malignant Hyperthermia	19
	Myocardial Ischemia	20
Oxygen Failure	21	
Pneumothorax	22	
Power Failure	23	
Right Heart Failure	24	
Transfusion Reaction	25	
Trauma	26	
<b>RESOURCES</b>	Crisis Resource Management	27
	Emergency Manual Use	28
	Infusion List	29

Phone List (Back Cover)

Stanford Anesthesia Cognitive Aid Program,\* Emergency Manual: Cognitive aids for perioperative crises, Version 4, 2021. See <http://emergencymanual.stanford.edu> for latest version. Creative Commons BY-NC-ND (<https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode>). \*Goldhaber-Fiebert SN, Austin N, Sultan E, Burian BK, Burden A, Howard SK, Gaba DM, Harrison TK.

# Implementing the Stanford Emergency Manual Using Simulation

Heather Bair DNP CRNA, Nick Hall, DNP CRNA, Matthew R. Mueller, DNP CRNA, Benjamin Blaylock, DNP CRNA, Sarah Dailey DNP, CRNA

## Introduction

- Critical events in the operating room create a stressful environment that affects team performance and leads to human error<sup>1</sup>
- The Stanford Emergency Manual (SEM) is a cognitive aid that helps providers recall key information and results in more effective execution of critical interventions during emergency situations<sup>2,3</sup>
- Simulation improves provider familiarity, acceptance, and likelihood of utilization of the SEM during critical anesthesia events<sup>3,4</sup>
- Implementing the SEM in multiple rural hospitals may have an increased benefit since they encounter emergency situations infrequently

## Purpose

To integrate the SEM into practice in rural Iowa community based and critical access hospitals.

### Objectives:

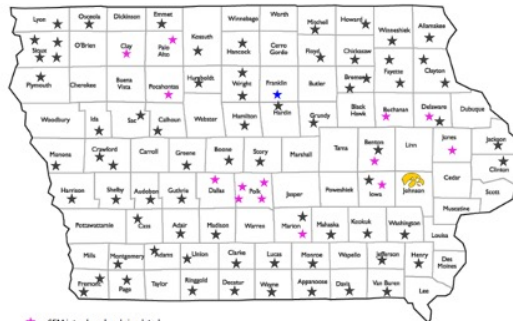
1. Increase awareness of the SEM among perioperative staff.
2. Familiarize staff on how to effectively use the SEM
3. Increase accessibility to the SEM
4. Integrate SEM into practice utilizing in-situ team simulation

## Methods

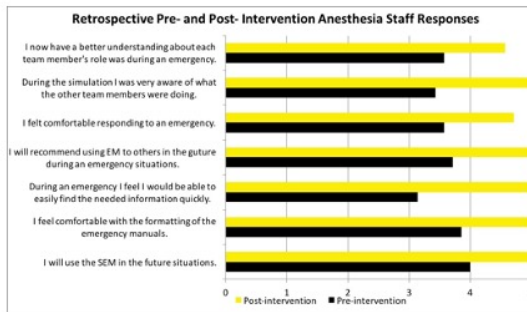
- Projects were deemed not human subjects research at each hospital site
- Educate perioperative staff on: human error, content, design, and the use of cognitive aids
- Specific simulations were designed for each rural Iowa facility including LAST, amniotic fluid embolism, MH and anaphylaxis
  - All facilitators completed the University of Iowa Team-based Simulation Design and Debriefing workshop to gain expertise in designing and conducting team simulation
  - Confidentiality agreement to assure simulation integrity and participant privacy
  - Post-simulation debriefing sessions
- A full day of simulation sessions utilizing the SEM was held at the Iowa Association of Nurse Anesthetists meeting for over 100 attendees

## Outcomes

- SEMs have been implemented using in-situ simulation in 11 rural and critical access hospitals in Iowa
- 37 separate simulation sessions were completed

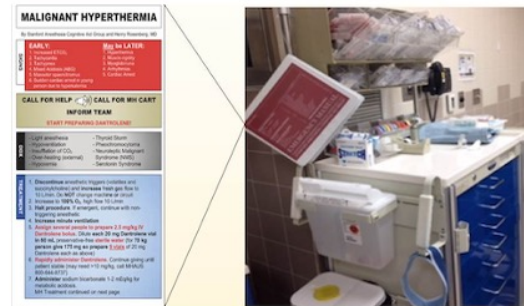


- Data from one project site



## Conclusions

- Staff who participated in simulations confirmed they are more likely to use the SEM during an emergency situation
- Consistent data collection from each site allows for cumulative data analysis
- External funding is needed to continue implementation of the SEM to more rural Iowa communities



## References

1. Kohn, L., Corrigan, J., & Donaldson, M. (2000). *To err is human: Building a safer health system*. Washington, DC: National Academy Press.
2. Stanford Anesthesia Cognitive Aid Group. (2016). Emergency Manual: Cognitive aids for perioperative critical events. Stanford Medicine. Department of Anesthesia.
3. Goldhaber-Fiebert, S. & Howard, S. (2013). Implementing emergency manuals: can cognitive aids help translate best practices for patient care during acute events. *Anesthesia Patient Safety Foundation*, 117(5): 1149-1161.
4. Goldhaber-Fiebert, S., Lei, V., Nandagopal, K., & Bereknyei, S. (2015). Emergency manual implementation: can brief simulation-based OR staff trainings increase familiarity and planned clinical use. *The Joint Commission Journal on Quality and Patient Safety*, 41(5): 212-220.

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# Across Iowa

## Doctor of Nursing (DNP) Projects

## SIM-IA

## Iowa Association of Nurse Anesthetists (IANA)





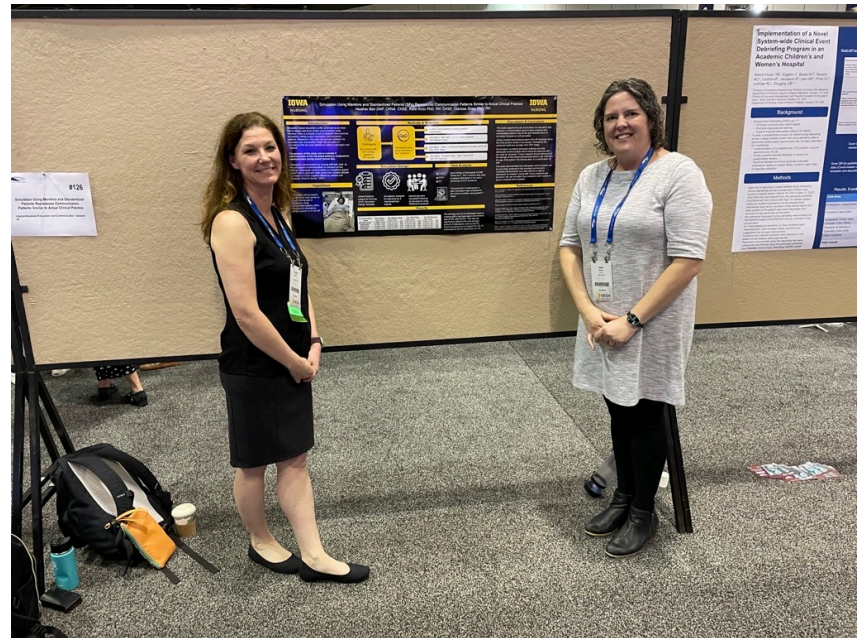
# Across the Nation

American Association of Nurse Anesthetists (AANA)

Boston 2018, Chicago 2019, Chicago 2022, Seattle 2023



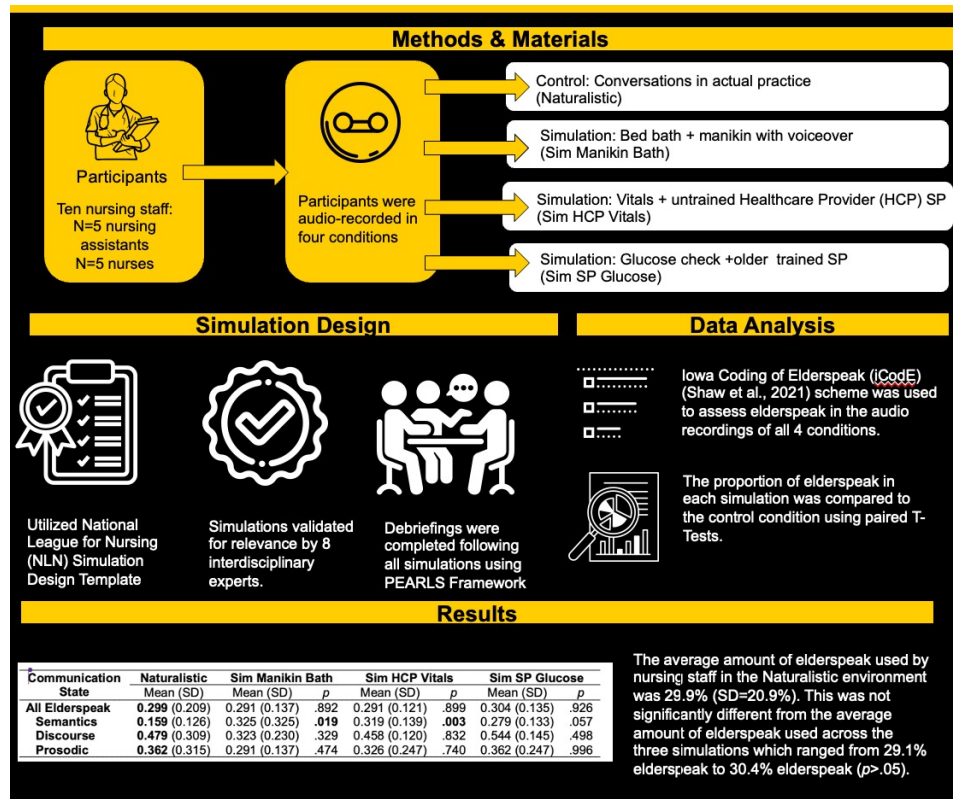
# International Meeting on Simulation and Healthcare (IMSH)



# Research: Does it Work?

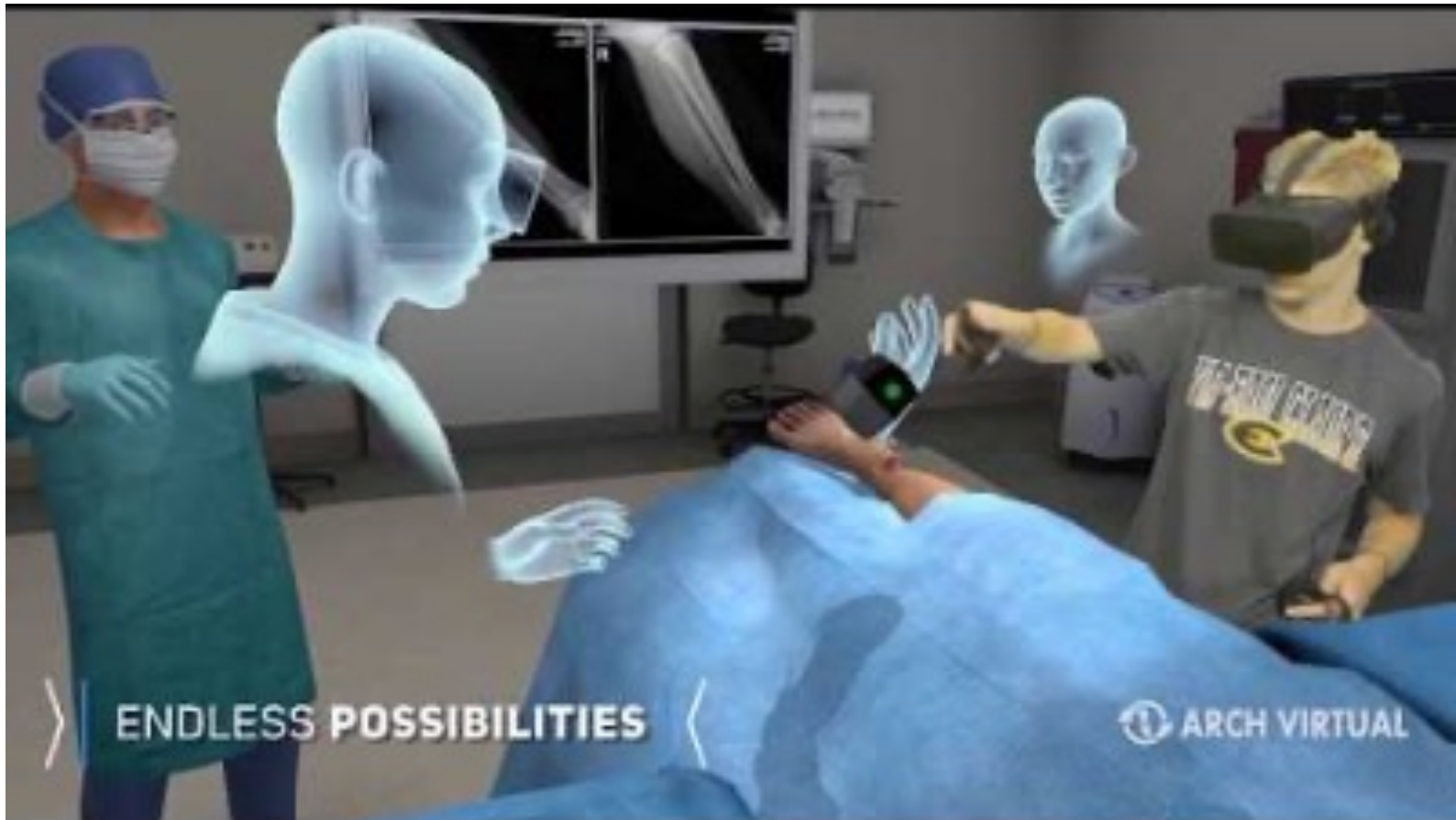
Simulation Using Manikins and Standardized Patients (SPs) Reproduces Communication Patterns Similar to Actual Clinical Practice

Heather Bair DNP, CRNA, CHSE, Katie Knox PhD, RN, CHSE, Clarissa Shaw PhD, RN



# The Future

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**Thank you**

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