

## Simulation in Medical Education: ROME Conference February, 2019

David Ross DO FACEP  
Director, Rural and Wilderness Medicine Track  
Associate Director, Military Medicine Track  
Associate Professor, Specialty Medicine  
Rocky Vista University, College of Osteopathic Medicine  
[dross@rvu.edu](mailto:dross@rvu.edu)

### Slide 2

#### Simulation in Medical Education

It's not just for medical students and residents

- Well it's not
- But typically, practicing clinicians are not incentivized in any way to consider simulation as part of continuing education.
- However, in the right circumstances, it can be a substantial benefit for those in practice

### Slide 3

#### No Relevant Financial Disclosures

### Slide 4

#### Learning Objectives for Presentation

1. Understand the basic formats to currently available to provide simulation in medical education.
2. Describe the potential benefits of simulation in enhancing the education of medical students, residents and practicing physicians.
3. Experience the use of an electronic patient simulator to facilitate learning in a medical case scenario.

### Slide 5 & 6

#### A Little History on the Use of “Dolls” or Manikins in Medical Education

In the early 1960's Drs. Safar, Kowenoven, and Elam were developing the concept of cardiopulmonary resuscitation (CPR). They needed a device that resembled a human torso to train providers in technique of CPR. They turned to Norwegian toymaker Asmund Laerdal. He used the image of the face of a girl said to represent the death mask of the face of a French teenager who drowned in the Seine in the 1880s as a model for the face of the manikin. The manikin was called Anne or Resusci Anne. Variants of it are still in use today. Five decades of students have shaken the manikin and asked, Annie, Annie, are you OK? And, of course, Annie was never OK.

That was the beginning of the use of “dolls”, or manikins, to facilitate medical education.

Laerdal is now one of several leading manufacturers of medical simulators. As far as I know, they are out of the toy business.

### Slide 7 -9

The aviation industry has used simulation for many years. Simulation has replaced the vast majority of actual inflight training for pilots and other aircrew. In fact, at many airlines, the first time a co-pilot steps on the actual airplane they have been training to fly, it's loaded with passengers. Nevertheless, some components of aviation can not be well simulated. For example, fighter pilots may not be able to experience all of the effects of G forces during maneuvers associated with fighter aircraft in a simulator.

## **Slide 10**

As mentioned in the slides above, No Simulation is Perfect  
This is especially true in medical simulations.

All of the simulation tools have flaws or weaknesses. No one device or manikin can be used in every situation.

## **Slide 11**

Any medical simulation exercise, or training, must acknowledge the imperfections alluded to above and account for them. Any lesson plan for a simulation must consider how to deal with the weakness of the tool the training will be using.

## **Slide 12**

So, it is very important to have Learning Objectives for Each Simulation Exercise.  
Only 2-3 Learning Objectives for each exercise are needed. But they should be very specific and tailored to the hoped-for student outcomes.

## **Slide 13&14**

What Simulation Equipment Do We Need and How Do We Incorporate That Equipment?

Well, it depends on what simulation we are doing and what are Learning Objectives are for the session.

Below is a list of possible simulation equipment, or strategies, to choose from:

- Electronic Patient Simulator
- Standardized Patient
- Task Trainer
- Moulage
- 3-D Virtual Simulation
- Simulated Case on Paper
- Role playing by learners and/or facilitators
- Practicing roles or procedures with a team

And the choice, or combination of choices, of the options above depends on the goals of the simulation training.

## **Slide 15**

### Model of a Simulation Training

1. Learner introduction to the simulator and other equipment being used (if needed) ~ 10 min
2. Scenario Pre-brief ~ 5min
3. Scenario ~ 10 - 15 min
4. Debrief \* ~ 15 - 30 min

\*The most important part of the training is the debrief. This is where the simulation students are asked what parts went well and what could be improved. It is also a time to review the Learning Objectives with the students and discuss appropriate differential diagnoses and treatment options for the simulated case.

## **Slide 16**

One of the key components of a simulation training is the concept of the “Suspension of Disbelief”. The Suspension of Disbelief idea has been borrowed from entertainment industry, specifically movies and the theater. The goal is just what the phrase says. The audience should completely buy-in to the actors and the sets and be transported from their everyday lives. This is also the goal in a high-quality simulation. In order to maximize student learning in a simulation, the scenario should be as realistic as possible. The students should experience a “Suspension of Disbelief.” In the presentation, I have several concluding pictures and videos that are aimed at addressing the Suspension of Disbelief. See if you find these images convincing, or not.

## **Slide 17**

How Does Simulation Help Us?

## **Slide 18**

What About High Risk, Low Frequency Procedures in Medicine?

## **Slide 19**

How Do We Train or Practice for These and Many Other Situations?

*See One Do One Teach One, is Dead*

*Doing Procedures on Newly Dead Patients is also ..... Well, Dead*

## **Slide 20**

How Does Simulation Help Us?

PRACTICE HANDLING UNIQUE PSYCHOSOCIAL PRESENTATIONS

PATIENT/FAMILY INTERACTIONS

“HAND-OFFS” INVOLVING TRANSFER OF PATIENT CARE

STAFF/INTER-PROFESSIONAL INTERACTIONS

PATIENT SAFETY ISSUES

CLINICAL EDUCATION

## **Slide 21 -44**

Pictures and Video Showing the Realism of Simulation in a Large Variety of Settings

## **Slide 45**

But We’re Too Busy

Unlike pilots, practicing physicians and clinicians are not incentivized to use simulation to practice skills and to refresh knowledge. Until that changes, it’s difficult to imagine the expansion of simulation to enhance continuing medical education. Eventually, physicians, and patients, must demand changes that facilitate the benefits of simulation for practicing clinicians.

## **Summary**

Simulation in medical education is not just for medical students and residents.

The origin of the use of manikins in medical education began in 1960 to support CPR training.

Aviation serves as a model of simulation use, but no simulator is perfect.

Learning objectives are critical to a quality training experience in medical simulation.

There are many equipment options as well as strategies for training in medical simulation.

“Suspension of Disbelief” is an important concept in maximizing educational effectiveness.

Simulation can enhance our learning in many aspects of medicine.

Strategies are needed to incentivize the use of simulation in continuing medical education.

