

# *Simulation of the Libby Zion Case in the Teaching of Medical Pharmacology*

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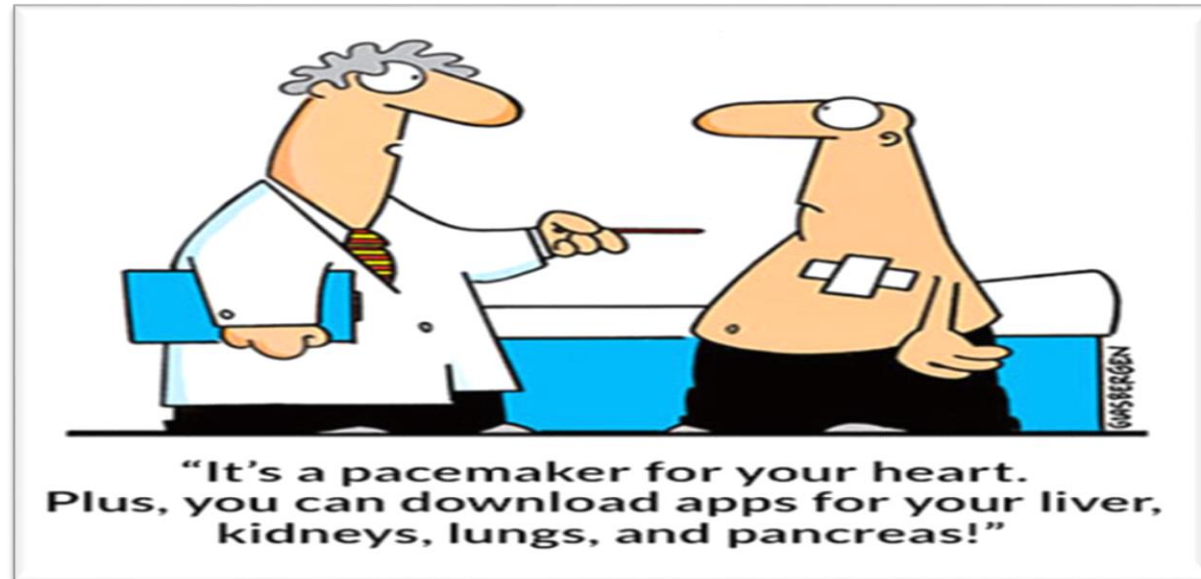
The Alabama College



of Osteopathic Medicine

# Disclosures

- Author has nothing to disclose



# Alabama College of Osteopathic Medicine



- Accepted its first class in fall of 2013.
- First Osteopathic School in Alabama
- System-Based Curriculum
- Flipped-Classroom model with TBL



# Use of Live-Stream Simulation During Pharmacology Integration Sessions



Streaming high fidelity simulation  
to pharmacology lecture  
Jan. 2014



Streaming live simulation  
to pharmacology session  
Jan 2015

# Use of Pre-recorded Simulation During TBL Sessions



Med.Sci.Educ.  
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ORIGINAL RESEARCH

## Use of Live-Stream and Pre-recorded Simulation in the Individual Readiness Assessment Test During TBL, a Novel Approach

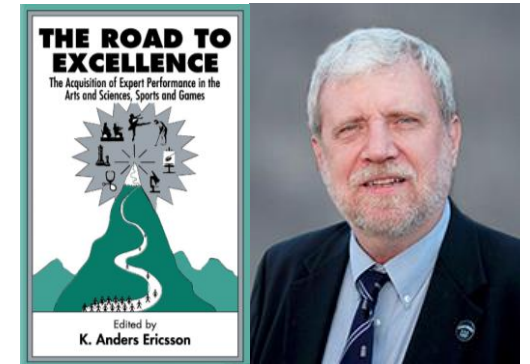
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Pre-recorded simulation use during TBL in 2016



# Filming a re-creation of an actual clinical situation

1. “Filming a re-creation of an actual clinical situation from a responsible doctor’s perspective...can be used to train less experienced doctors”.
2. “With critical decision points highlighted to provide direction to the less experienced doctors”
3. [“Livesaver” Resuscitation Council in the UK.](#)
4. [Grey’s Anatomy Scene](#)



# Pre-recorded simulation to Teach and Assess

Order Qualifiers - Saline solution, normal

Route of Administration

Inhalation

Intravenous

Frequency

Continuous

OK Cancel

- Computer-based case simulation in USMLE-Step 3 has allowed an expansion in ways to assess examinees on their diagnostic decision making and therapeutic intervention skills.

## Primum Computer-based Case Simulation

About Reverse Color A A

Maximum allotted real time: 8 minutes + 2 minutes for case-end orders

Interval Hx or PE Write Orders or Review Chart Obtain Results or See Patient Later Day 1 @ 16:02 (Wed) Change Location Emergency Department

History

Interval/follow up

Physical Examination

(Order VS from order sheet)

<input checked="" type="checkbox"/> General Appearance	<input type="checkbox"/> Heart/Cardiovascular
<input checked="" type="checkbox"/> Skin	<input type="checkbox"/> Abdomen
<input checked="" type="checkbox"/> Breasts	<input type="checkbox"/> Genitalia
<input checked="" type="checkbox"/> Lymph Nodes	<input type="checkbox"/> Rectal
<input type="checkbox"/> HEENT/Neck	<input type="checkbox"/> Extremities/Spine
<input type="checkbox"/> Chest/Lungs	<input type="checkbox"/> Neuro/Psych

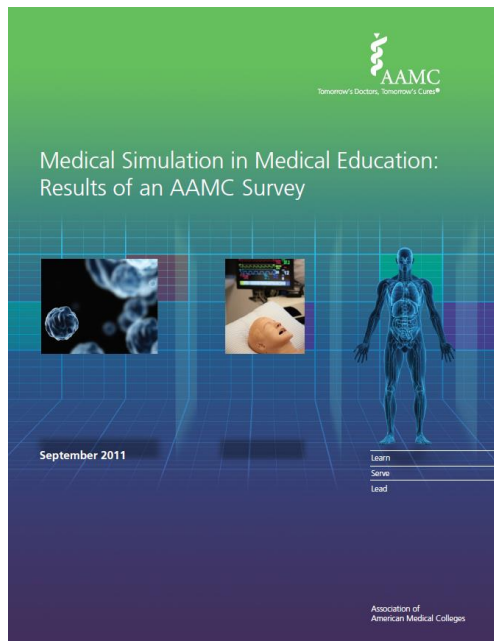
OK Clear

Sample practice objective structure clinical exam from NBME Website



# Does pre-recorded simulation meet these expectations?

**Topics that ranked the highest among medical schools that use medical simulation for education and assessment included:**



medical knowledge

patient care

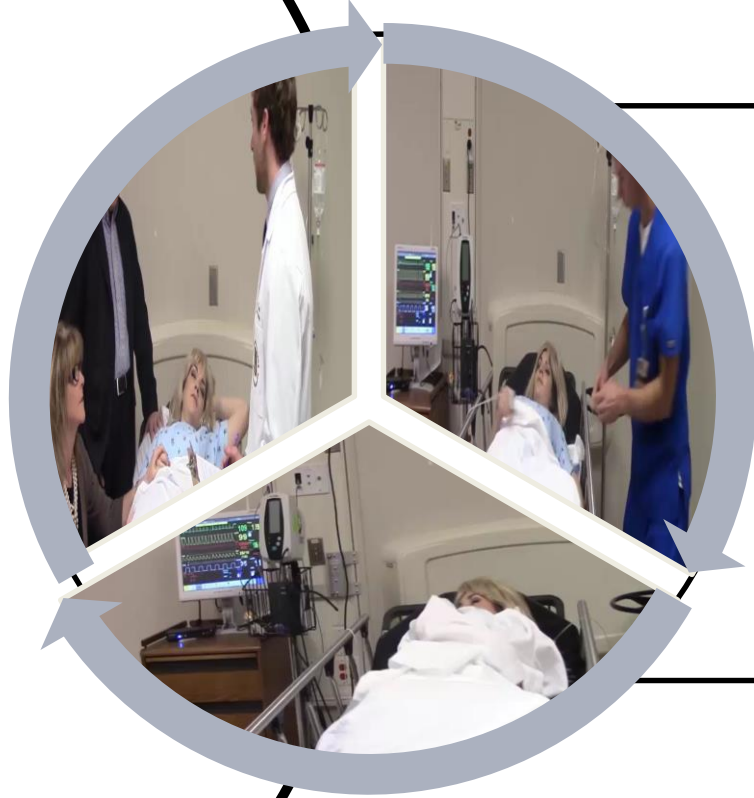
interpersonal communication skills

professionalism

critical thinking and decision making



# *Pre-recorded simulation of a reenactment of the Libby Zion Case During TBL*



## Libby Zion

- Libby was a college freshman with an ongoing history of depression who went with her parents to New York Hospital in Manhattan on the evening of Oct. 4, 1984.
- Libby died within 24 hours of an emergency hospital admission.
- A long malpractice case followed which found at fault the system of unsupervised long hours given to interns and residents which led to a faulty decision.
- In the winter of 1994, *Zion v. New York Hospital* went to trial
- The Libby Zion law passed in New York State in 2008 and is set to limit the number of work hours per week for residents (80 to 57).

From: The Case that Shock Medicine The Washington Post Tuesday, November 28, 2006

# Case

An 18-year-old female college student, who was at a party with her friends where illicit drugs were being consumed, suddenly began to feel anxious, confused and fearful. Within half an hour she was in a panic state, crying and complaining of being seriously ill. She later developed fever.

# Question 1

In the attached video, what is the mechanism of action for prescription drug patient is taking?



A) Drug is antagonist to NMDA receptor

B) Drug is a positive modulator of the GABA<sub>A</sub> receptor

C) Drug inhibits MAO-A and MAO-B enzymes

D) Drug selectively inhibits re-uptake of 5-HT

E) Drug activates the 5-HT<sub>1A</sub> receptor

# Question 2

What do you suspect is occurring here?



A) Symptoms suggest drug misuse

B) Symptoms suggest drug overdose

C) Symptoms suggest drug tolerance

D) Symptoms suggest withdrawal syndrome

E) Not enough information

# Question 3

What do you suspect is occurring, what would be the most probable cause?



A) Tolerance to prescription medication

B) Hallucinogen persisting perception disorder

C) Phenezine withdrawal syndrome

D) Unknown drug interaction

E) Not sure, not enough information

3:00 AM:

- The parents are told to go home and rest, patient will be taken care and will be fine.

3:02 AM:

- After parents leave senior clinician is consulted by phone, and directs to administer a shot of meperidine to calm patient.

3:30 AM:

- Nurse finds patient is restless and confused, she was more agitated and tried to pull out her IV line. The nurses call physician to attend the patient.

3:37 AM:

- At 3:37 physician directs an injection of haloperidol.

4:30 AM:

- Nurse finds patient trying to climb over the railing of her bed. After reporting to resident physician, resident physician orders to restrain the patient, and prevent her from hurting herself. Patient placed in a strait jacket and her wrists and ankles are tied to the bed

# Question 4

What do you suspect is the most likely diagnosis here. Talk to your teammates and make a consensus on your diagnosis, and what you would have done differently based on your choice selection?



A) Anticholinergic toxidrome

B) Neuroleptic malignant syndrome

C) Malignant hyperthermia

D) Serotonin syndrome

E) Life-threatening abstinence syndrome



You have to make the  
phone call to parents  
to inform of the news,  
what do you tell  
them?



# Debrief

## Patient History

She had been taking a prescribed antidepressant phenelzine (~ 2 months) until the night before.

Blood urine samples showed traces of cocaine; patient did not report it.

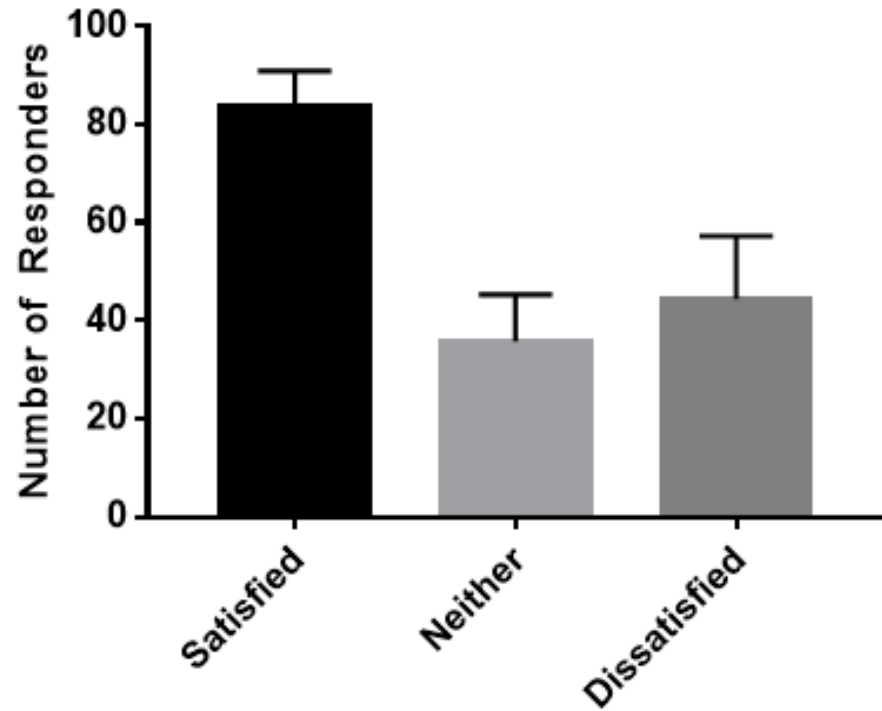
Received a dose of meperidine for analgesia (serotonin syndrome)

Received a dose of haloperidol for psychotic symptoms.

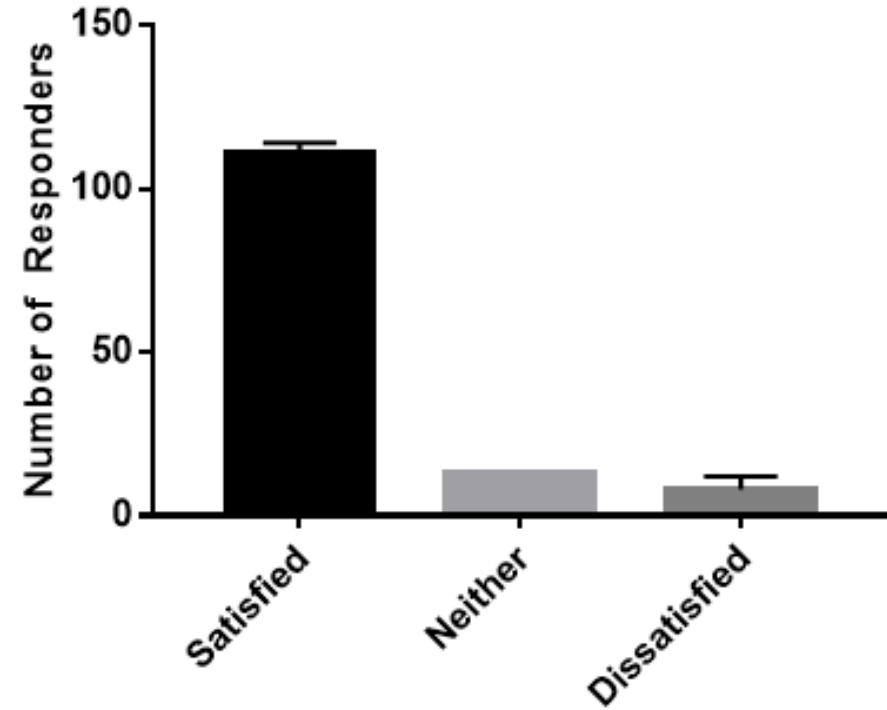
Patient then restrained with restraint jacket.

Hypertensive crisis: ↑ level of circulating serotonin → serotonin toxicity

# Level of Satisfaction with the Use of pre-recorded videos during TBL

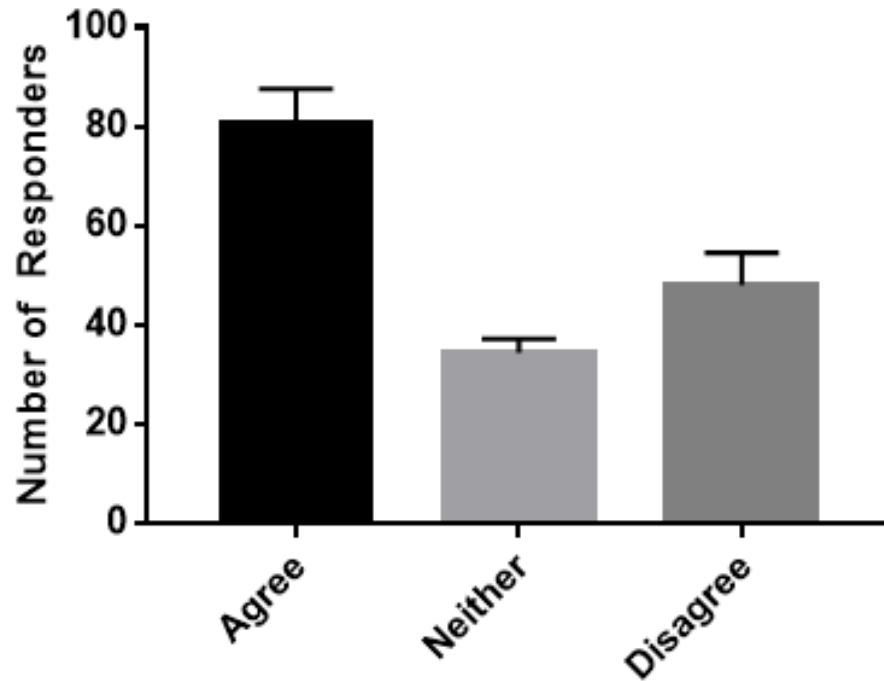


Videos used during the iRAT part of TBL (2016)

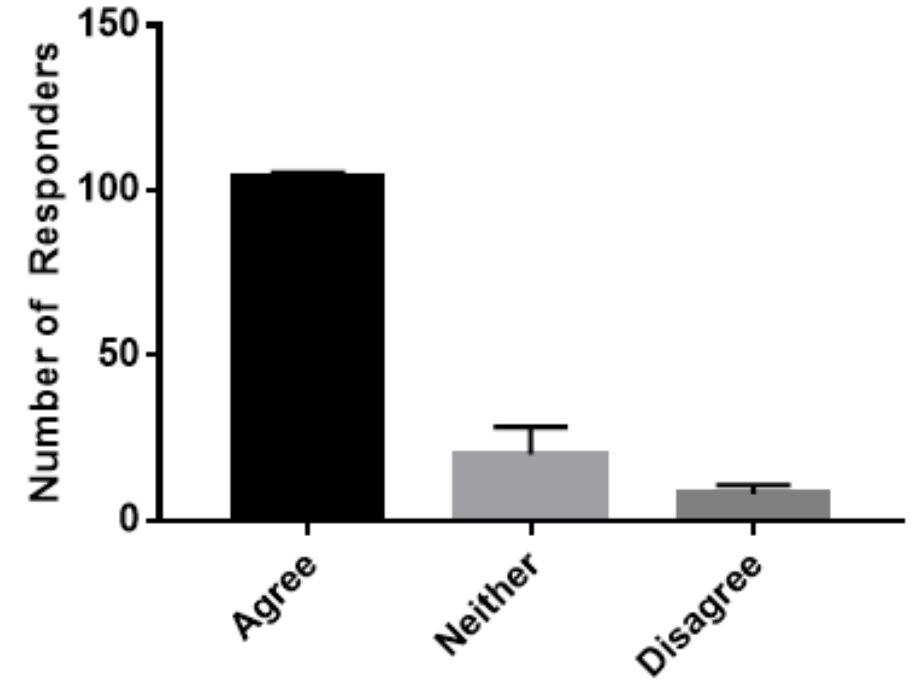


Videos used during the application part of TBL (2017)

# Number of student responders who agreed or disagreed when asked if this method of simulation during TBL was an appropriate Use of their Time



Videos used during the iRAT part of TBL (2016)



Videos used during the application part of TBL (2017)

# The incorporation of this form of pre-recorded simulation during TBL

Leads to effective use of technology during TBL.

Helped bridge basic science and clinical sciences.

More students were satisfied than dissatisfied with this approach.

More agreed that this was a valuable use of their time.

medical knowledge

patient care

interpersonal communication skills

professionalism

critical thinking and decision making

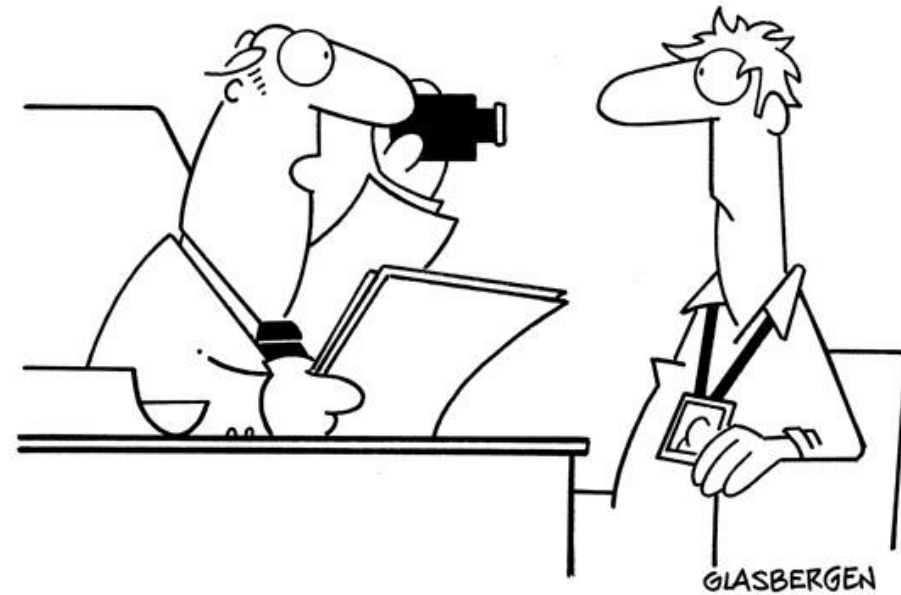
# Conclusions

- The use of pre-recorded videos to teach and assess pharmacology during the assessment or application part of TBL can be an alternative teaching modality, that is less costly and provides experiences without risk to patients.



# THANK YOU

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**“I’ll be videotaping your performance review.  
Not for security purposes, for YouTube!”**



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# References

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