



The Effects of Simulation Training on Entrustable Professional Activities During Labor and Delivery Clerkships



Anthony Lim, Fakhra Khalid MD, Melody Hou MD MPH FACOG
UC Davis School of Medicine

Introduction

Entrustable professional activities (EPA's):
Graded responsibilities earned during training integrating competencies
"Descriptors of work"

Competencies:
Qualities deemed essential for patient care
"Descriptors of doctors"

Graduate medical education rely on EPA's to integrate competencies. Undergraduate medical education focuses on individual competency milestones rather than integrating them.

"Mastery of abilities in individual competency domains does not ensure the capability to integrate them across domains or to appropriately apply them to patient care"

Chen et. al

In the 2017-2018 academic year (AY), 3rd year medical students (MS3's) were trained by residents and attendings in vaginal deliveries using pelvic models during Transition to Clerkship (T2C) orientation held prior to the start of clinical clerkships. The simulation focused on delivering spontaneous vaginal deliveries (SVD) and to help student prepare for their OBGYN rotation.

Question

Does student experience in a vaginal delivery simulation encourage providers to expand EPA's for medical students on their OBGYN rotation?

Objectives

- Primary: How does simulation training affect a medical student's experience on their labor and delivery rotation. Do student EPA's increase with completion of simulation training?
- Secondary: Does a vaginal delivery simulation improve confidence and learning for MS3's prior to their OBGYN rotation?
- Secondary: What improvements can be made to the simulation to make it useful for students?

Hypothesis

Vaginal delivery simulation training prior to a student's OBGYN rotation increases provider trust and EPA's. This will increase medical student confidence in performing deliveries and enhance their experience.

Methods

The study was conducted exclusively at UC Davis Medical Center. Surveys were sent to UC Davis OBGYN residents, attendings, and to providers at affiliated hospitals.

3rd Year Medical Students

- MS3's who participated in T2C training had the opportunity to complete a pre- and post-test regarding what they learned during the SVD simulation session
- MS3's were also invited to complete a survey about their OBGYN experiences at the end of their rotation

4th Year Medical Students

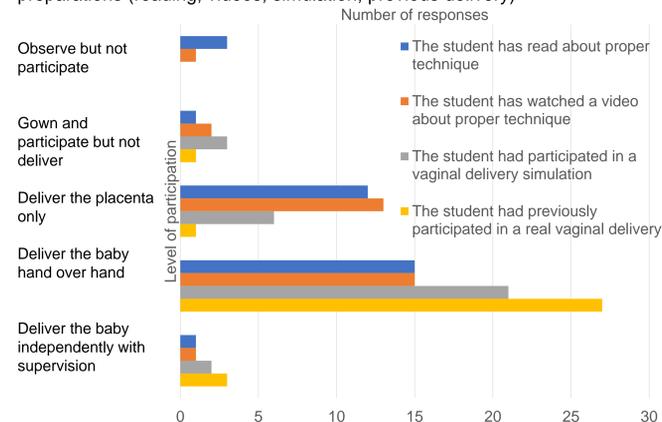
- MS4's who completed their OBGYN rotation in the 2016-2017AY were sent an optional survey regarding their level of participation in an SVD during their OBGYN rotation. Students received a \$5 gift card for completing the survey.

Medical Educators (Residents and Attendings)

- Residents and attendings at UC Davis Medical Center and affiliated sites were sent surveys asking how prior preparation (simulations, readings, lectures, or videos) influenced a student's involvement in an SVD

Medical student participation level with specific preparations

Medical educators were asked to specify level of participation in an SVD they would feel comfortable with a medical student completing given various preparations (reading, videos, simulation, previous delivery)

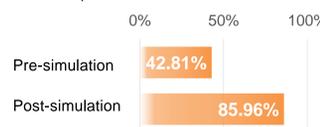


Results

- 95 of 98 MS3 T2C simulation surveys were analyzed with a paired t-test. Incomplete surveys were not included in the survey
- 52 of 55 MS3's from OBGYN rotation 1-4 during the 2017-2018AY completed their post-rotation surveys
- 51 of 102 MS4's who completed their OBGYN rotation during the 2016-2017AY finished the post-rotation survey. Experiences were compared to MS3's using Fischer's exact test,
- 32 residents and attendings responded to the survey. Total faculty varied during study. 81.3% of providers were "somewhat likely" to "extremely likely" in letting medical students participate in a SVD after simulation training (CI =68-95%)

Mean knowledge scores of MS3's prior to rotation

During T2C orientation, average quiz scores of MS3's were higher after their simulation training (p<0.001, 99% CI)



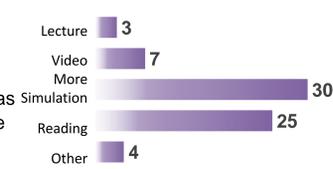
Mean comfort level of MS3's prior to rotation

Students had higher comfort levels after simulation training (1=uncomfortable, 5=comfortable) (p<0.001, 99% CI)



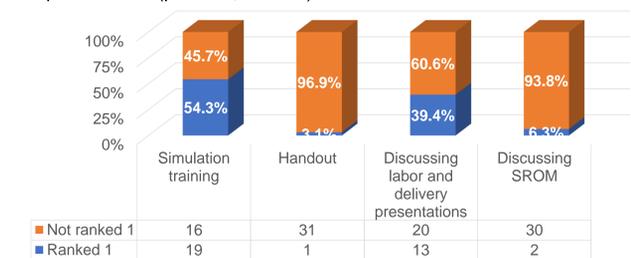
MS3 feedback on simulation training

Students were asked to choose improvements to the simulation such as Simulation, More, Reading, and Other (p<0.001, 99% CI)



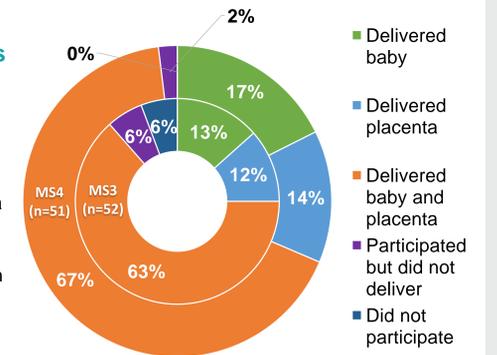
Ranking of most helpful T2C component for MS3's

Medical students were asked to rank components of the simulation in how helpful it was during their rotation. A chi-squared test compared the number of "1" rankings each component received. Students were able to select multiple "1" ranks (p<0.001, 99% CI)



4th year students vs 3rd year student labor and delivery experience

Distribution of participation level in a real vaginal delivery. 4th year students did not receive simulation training prior to their rotation. (p=0.442)



3rd Year Student Comments on simulation training

- "I appreciated the session during T2C because it familiarized us with the vaginal delivery"
- "It was very helpful but also a while ago. Can we include it in the OBGYN orientation?"
- "Good info, too far removed from rotation, would be impossible to remember in rotation 5/6"
- "The simulation was great. better than reading. just the timing of it is off. Maybe during rotation orientation"
- "It was too long ago to remember"

Discussion

Simulations had an immediate improvement in MS3 knowledge and confidence. Student feedback included more time with simulations and having it closer to their OBGYN rotations. Simulations were the preferred learning modality for MS3's and most useful for their rotation.

Despite formal simulation training, MS3's had similar experiences in their OBGYN rotation to MS4's who were not trained. One possibility is that MS3's inconsistently informed preceptors of their simulation experience which could have affected their participation level.

A majority of providers were likely to let students participate in an SVD with only simulation training prior to their rotation. Simulation was second only to actual previous delivery experience in terms of increased EPA's.

Limitations of study include recall bias from MS4's and response and selection bias in medical educators. Sample sizes were also low due to limited MS3 cohorts who have completed their rotation.

Acknowledgements: We would like to thank Dr. Machele Wilson PhD for statistical assistance and Lauren Snow for the student research grant to make this project possible