2019 ACS Surgical Simulation Summit

AN INTERNATIONAL MULTI-PROFESSIONAL MEETING

MARCH 15-16, 2019 | Swissôtel, Chicago, IL
Pre-Meeting Activities: Thursday, MARCH 14, 2019

facs.org/aeisummit
Expansion of Surgical Simulation Through the Development of Economic Laparoscopic Simulators and Student-run Organizations

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### Funding Source for My Research Project

#### Potential Funding Sources:

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<th>Potential Funding Sources:</th>
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Advances in Surgery

• Minimally Invasive Surgery (MIS)
  – Revolutionized surgery in the U.S. since 1990
  » Standard of care

MIS: Benefits & Challenges

Lower Infection Rates
Faster Recovery Time
Less Narcotics Use

Unnatural Maneuvers
Altered Visual Perception
Many Years of Practice
MIS Challenges

• Laparoscopic Surgery
  » 2D viewing of 3D space
  » Fulcrum effect
  » Modified coordination
Laparoscopic Training

• “Box Trainers”

  » Fundamentals of Laparoscopic Surgery (FLS) is a series of inanimate coordination tasks

    ▪ Required pre-requisite for general surgery board certification

Okrainec “Trends and results of the first 5 years of Fundamentals of Laparoscopic Surgery (FLS) certification testing.” *Surgical Endoscopy* (2011)
• Surgery remains among the most **unexposed** fields prior to clerkship

• **22.2%** institutions offer pre-clerkship surgical skills electives

• Surgical clerkships **shortening** across the country
  – students are less frequently achieving participatory roles

Study Purpose

- **Organize** a Student Simulation Interest Group
  - Peer-to-peer learning
- **Design** quality trainer box for surgical trainees
  - Cost-effective
  - Readily Reproduceable
- **Assess** impact on student perceptions towards surgery
  - Surgical Clerkship Preparedness
  - Confidence Towards Surgical Residency
Student Simulation Interest Group (SSIG)

- Attendings
- Fellows
- Senior/Junior Residents
- Interns
- Clinical Student
- Pre-Clinical Student
Equipment Design

• Collaboration between **surgical trainees** and **engineers** specialized in low-cost materials
  – Engineers
  – Interns
  – Medical Students
  – Surgery Residents
  – Surgeons
Results: 2D Design
Assembled Trainer Box
Accessories/Tools
Laparoscopic Fundamentals
Data Collection

- **28** participants attended at least one simulation event
  - » Duration: 8 weeks
  - » 90 minute events
  - » Median events: 3

- Questionnaires administered prior to participants first event and after the last simulation event
Surgical Residency Confidence

Confidence Rating

Pre Simulation  Post Simulation

*
Pre-Clinical Surgery Perceptions

96% Positive impact on surgery perception

93% Enhanced interest in surgery

93% Early exposure improved understanding of surgery

86% Supplemented lack of surgical exposure in preclinical student curriculums
Conclusions

• Interprofessional innovation and SSIG may be an effective means of overcoming the major limitations of cost and instruction time in the expansion of surgical simulation exercises.
Limitations

• Lacks control group
• Longitudinal analysis needed
• Mentoring is a key component
Summary
Implications

• Student Simulation Interest Group reproducible at other institutions

U.S. Medical Schools

BYU PreMed
Implications

- The low-cost & portable design make it optimal for remote training programs across the globe.
Future Direction

- Future studies comparing mediums of instruction and mentorship could further enhance the impact of low-cost training equipment.
Acknowledgments

- Meharry Medical College
  Pamela C. Williams Simulation & Clinical Skills Center
- Student Participants
- Organization Leaders
Questions?

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