SIMULATION-BASED TRAINING FOR NEUROSURGICAL INSTRUMENT RECOGNITION: A RANDOMISED TRIAL

David B. Clarke, Murray Hong, Nelofar Kureshi, Lynne Fenerty, Ginette Thibault-Halman, Ryan D’Arcy
Disclosures

David B. Clarke and Ryan D’Arcy are members of the medical advisory board for Conquer Mobile.
Research Objectives

To determine whether tablet-based training:

- Improves instrument recognition in a simulated environment
- Increases recognition of real instruments
- Results in retained learning
Methods: Neurosurgical Residents

Residents
N=16

Group A
Simulation training before real instruments
PeriopSim Instrument Trainer x 3
PeriopSim Burr Hole Procedure x 2
Real instrument tray

Group B
Simulation training after real instruments
Real instrument tray
PeriopSim Burr Hole Procedure x 2
PeriopSim Instrument Trainer x 3
Results: Neurosurgical Residents

Simulation

Group A: Simulation Training before real instrument recognition
Group B: Simulation Training after real instrument recognition

p<0.001

p=0.001
Results: Neurosurgical Residents

Real Instruments: Knowledge Transfer

Instrument training before real instruments
Instrument training after real instruments

Group A
Group B

Percentage correct

Time (seconds)

p<0.001

p<0.05
Methods: Nurses

Nurses N=100

Group A
Simulation training before real instruments
- PeriopSim Instrument Trainer x 3
- PeriopSim Burr Hole Procedure x 2
- Real instrument tray

Recall (7 days)

Group B
Simulation training after real instruments
- Real instrument tray
- PeriopSim Burr Hole Procedure x 2
- PeriopSim Instrument Trainer x 3

Recall (7 days)
Results: Nurses

Simulation Day 1

- Group A: Simulation Training before real instrument recognition
- Group B: Simulation Training after real instrument recognition

- **p<0.001**
- **p<0.01**

Instrument Trainer:

- Session 1
- Session 2
- Session 3

Burr hole Procedure:

- Session 1
- Session 2
Results: Nurses

Real Instruments Day 1 vs. Day 7: Knowledge Transfer and Retention

- Group A: Simulation Training before real instrument recognition
- Group B: Simulation Training after real instrument recognition

Percentage correct

Day 1 Day 7

p<0.01
p<0.0001

Time (seconds)

Day 1 Day 7

p<0.0001
Conclusions

We have shown that tablet-based simulation:

1. Improves recognition of surgical instruments in this simulated environment
2. Results in improved identification of real instruments
3. Facilitates the retention of real instrument knowledge at least one week after training